DIGI®
When Accuracy Counts

DC-200/300

Counting Scale

Version 1.37

Service Manual

RICE LAKE WEIGHING SYSTEMS
Commitment Beyond Measurement®

ISO 9001 REGISTERED

77150

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About This Manual

This manual contains technical instructions and procedures for servicing the DC-200/300 counting scale. It is for the use of DIGI scale dealers and authorized technicians. The manual does not attempt to cover again all of the operating procedures covered in the DC-200/300 operation manual nor does it cover every possible service situation. If you have questions regarding this manual or a service-related situation not covered by this manual, please contact the Service Department by calling 715-234-9171. This manual applies to Version 1.37 of the DC-200/300 counting scale.

Caution

Some procedures described in this manual require work inside the scale base. These procedures are to be performed by qualified service personnel only.

Authorized distributors and their employees can view or download this manual from the DIGI distributor site at www.DigiScales.com.

1.0 Overview

1.1 DC-200/300 Specifications

The following table illustrates all specifications associated with the DC-200/300 counting scale.

General Operating Specifications	Weight Display Resolution	1/2,500 1/5,000 1/10,000
	Counting (internal) Resolution	1/1,000.000
	Power Source and Frequency	AC 100-120V, 50/60 Hz
		Battery (DC-200 only) 12V, 3.2 Ah/20hr
	Power Consumption	50W
	Operating Temperature	-10 C to 40 C (14 F to 104 F)
	Operating Humidity	15 to 85% RH Maximum
Dimensions	Platter Size	360 x 275 mm / 14.17 x 10.83 in
	Dimensions	410 mm (L) x 378 mm (W) x 140 mm(H) 16.14 in (L) x 14.88 in (W) x 5.52 in (H)
Analog Specifications	Load Cell Excitation	12 VDC
	Number of Load Cells	four 350 ohm load cells maximum
	Scale Channels	Up to 3 scales including the built-in scale
	Input Sensitivity	0.4 - 2.0mV/V
Digital Specifications	Display	LCD with backlight (136 x 16 dots w/ icon) Weight: 5 digits Unit Weight: 5 digits Quantity: 7 digits
	Memory	2 Mb standard (up to 5000 items)
	Programmable Data per Item	ID code (32 digits), Unit weight (5 digits), Part number (32 digits), Part name (32 digits), Location (32 digits), Inventory (8 digits), Threshold (8 digits), Tare weight (5 digits), Set point target data
	Printing Items	ID code, Lot number, Net weight, Gross weight, Unit weight, Tare weight, Parts name, Parts number, Quantity, Task contents, Barcodes (code 39, code 128)
Mechanical Specifications	Keyboard Keys	Mechanical switch
	Number of Preset Keys	32 preset keys
	Printer Type (DC-300 only)	Drawer type Paper types: label and receipt Paper width: for label - max. 60 mm, for receipt - 40, 50, or 60 mm Resolution: 8 dots/mm Speed: For label - 80 mm/sec, for receipt - 100 mm/sec

Table 1-1. DC-200/300 Specifications

Interfaces and Ports	Amphenol	one 14-pin interface to scale
	RS-232C	three RS-232C data ports (8-pin DIN) to PC, printer, force balance or scanner
	Ethernet	one Ethernet port to PC, hub, or router
	IBM Keyboard	one IBM keyboard port
Electronic Components	Main CPU	Hitachi HD6413003RF16 (H8/3003)
	Flash Memory	MBM29F160BE-70
	SRAM	Hyundai HY628400ALLG-55 (Normal pin) Mitsubishi MEM5408ART-55LL (Reverse pin)
	Display Device	IDW RD747SG-LG
	Printing Head (DC-300)	Kyocera KYT-56-8MPP1-TRS
	DC Stepping Motor (DC-300)	Minebea 17PM-K448-G5V
	A/D Converter	Teraoka TWB-09130 (AD Main Board)
	Power Supply (DC-300)	NEMIC Lambda ZD75-0524

Table 1-1. DC-200/300 Specifications

1.2 Keyboard and Display

Figure 1-1 shows the DC-200/300 console with annunciators, the alphanumeric keyboard and the numeric keypad. Annunciators are described in Section 1.2.1. Section 1.2.2 describes the DC-200/300 keyboard and keypad.

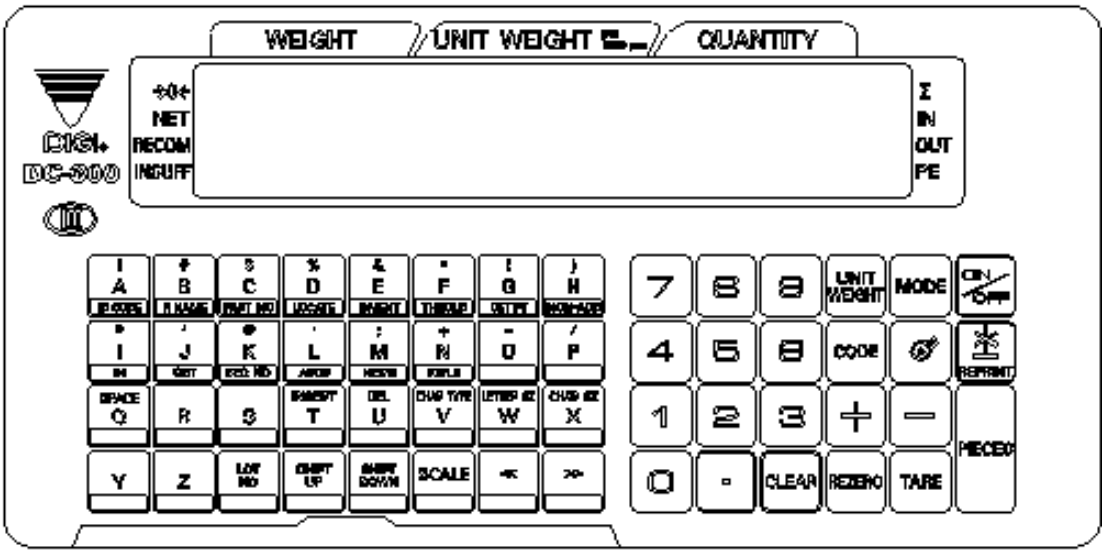

Figure 1-1. DC-200/300 Display

1.2.1 Annunicators

Table 1-2 shows a list of the annunciators that the DC-200/300 uses to provide additional information about the value being displayed. The annunciators are illuminated when the specific function is being performed.

Annunciator	Annunciator Meaning
→ 0 ←	Gross weight is zero
NET	Display shows net weight (when tare weight is entered or recalled)
RECOM	Unit weight is recomputing is possible
INSUFF	Net weight is below specified percentage of scale capacity
∑	Memory indicator showing quantity accumulation is being done
IN	Inventory IN (for counting mode)
OUT	Inventory OUT (for counting mode)
PE	Paper end.
R	Scale is in Registration Mode, also referred to as Operation Mode. (see Section 2.10 for description of modes)
S	Scale is in Programming Mode. (see Section 2.10 for description of modes)
X	Scale is in Report Mode. (see Section 2.10 for description of modes)
Z	Scale is in Service Mode. (see Section 2.10 for description of modes)

Table 1-2. DC-200/300 Annunciators and Function

1.2.2 Key Functions

The DC-200/300 features a full alphanumeric keyboard with many functions for managing inventory information and scale operation. Table 1-3 lists the keys and key functions of the DC-200/300 keyboard and keypad (see Figure 1-1 on the previous page).

Note: *Some keys have different functions depending on what mode you are in, so be sure to check which mode is selected before using them.*

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Key	Description
ON/OFF	Turns the scale display on or off
0 to 9	Used to enter numeric values. When using the scale, first enter a numeric value, then press the appropriate function key.
MODE	Allows cycling between the different modes: • Operation Mode – weighing and counting operations • Report Mode – print item, inventory, and shelf location reports • Program Mode – entering item data, factory name • Password Mode – password protecting certain operations • Service Mode -setup and troubleshooting by an authorized dealer or technician
TARE	• Operation Mode – set and clear tare weights • Program Mode – do an item test print • Other Modes – used to select “No”
CLEAR	• Operation Mode – clear keyed-in data from the display starting with the last digit entered • Other Modes – used to select “Yes”
REZERO	Used to reset the scale to zero. Also used in conjunction with other keys to enter the maintenance mode. The REZERO key does not function when the scale is in motion.
PIECES	• Operation Mode - compute unit weight by sampling. Press the PIECES key after placing a 10-piece sample on the platform, or after using the numeric keypad to enter the sample size. On multi-channel units, ensure that the correct scale is selected. • Other Modes - escape the programming screen without saving data
UNIT WEIGHT	Used to enter a known unit weight using the numeric keypad
+	• Operation Mode – accumulate the total quantity • Program Mode – select an item to be programmed such as item code, factory name, or cycle through set-point modes • Report Mode – select the type of report to print • SPEC Setting – move between SPEC numbers (low to high)
–	• Program Mode –- select programming item such as item code, factory name • Report Mode – select report type • Other Modes – enter the delete function • SPEC Setting – move between SPEC numbers (high to low)
CODE	• Operation Mode – call up stored item code information and switch between item code inventory IN and OUT modes • Program Mode – store the programmed data
.	Enter numeric values containing a decimal point **Note:** *A numeric value must be entered before the decimal point. For example, .250 would be entered as 0.250.*
	Feed label or receipt paper (DC-300 only)
SCALE	Cycle between Scales A through D when using the DC-200/300 as a multi-scale system.

Table 1-3. DC-200/300 Key Functions

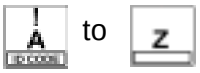
Key	Description
	• Operation Mode – print a label or report • Report Mode – print out a report • Program Mode – enter information about an item into temporary memory
	• Operation Mode – view item code data stored in memory • Program Mode – enter alphabetic data
	Move the cursor. Change the entry to the right. Also used to cycle forward between choices in *SPEC* setting mode.
	Move the cursor. Change the entry to the left. Also used to cycle backward between choices in *SPEC* setting mode.
	Select the top function or character of a desired character key
	Select the bottom function or character of a desired character key, generally to quickly view the values in different registers
	Shift between code type for keyboard entry. Options are: • P:KEY - enter the letter or number corresponding to the key pressed • A:KEY ASCII code - select by entering the hex code for the character • T:KEY Teraoka code - select by entering the numeric value for the character Section 9.3 on page 116 - Character Code Tables
	Delete data
	Insert data

Table 1-3. DC-200/300 Key Functions

1.3 Interface Ports

The DC-200/300 is equipped with a number of interface ports enabling it to be connected with other devices. There are RS-232C ports that allow connection to bar code readers, printers or force balances. An IBM keyboard interface permits connection to an external keyboard or wedge scanner. The Ethernet connection makes the DC-200/300 a networkable workstation and allows you to use the Utility Transfer and Label Design programs.

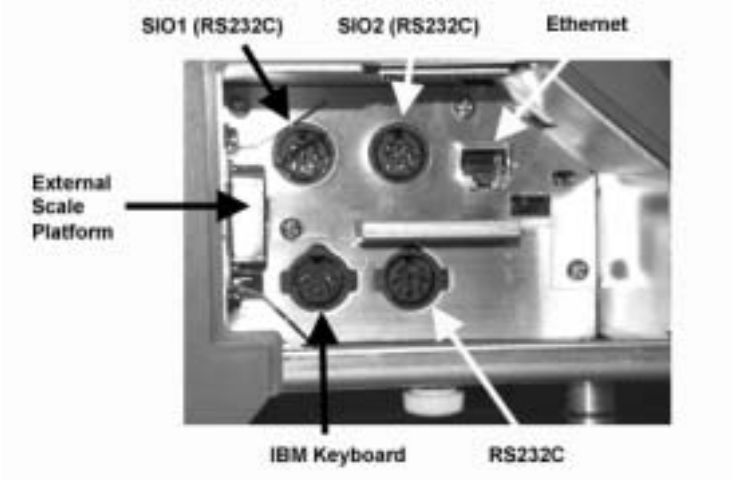


Figure 1-2. DC-200/300 Interface Ports

1.4 Capacities and Resolutions

Table 1-4 lists the scale capacities and resolutions for all models of the DC-200/300 counting scales. The system weighing accuracy is 0.02 percent.

Counting scales specify two types of resolution:

- Weight (or external) resolution
- Counting (or internal) resolution

Weight resolution is displayed in divisions of the full scale capacity which is divided into weight increments. For example, a 5-lb scale divided into 10,000 display divisions would display weight with 0.0005 lb divisions (10,000 divisions x 0.0005 lb = 5.0 lb).

Counting resolution is based on the internal resolution of the scale. The weight and counting resolutions for the DC-200/300 capacities are shown below and apply to all models of DC-300 counting scales.

DC-200/300 Single Scale

Note: *Units are selectable from lb to kg and can be programmed to weigh in other primary units: lb, kg, g.*

Capacity	Mounting Internal/External	Weight Resolution	Counting Resolution	Platform Dimension
1.0 lb	Both	0.0001	0.000001	6" x 8"
2.5 lb	Both	0.0002	0.000002	7" x 10"
5.0 lb	Both	0.0005	0.000005	12" x 14"
10.0 lb	Both	0.001	0.00001	12" x 14"
25.0 lb	Both	0.002	0.00002	12" x 14"
50.0 lb	Both	0.005	0.00005	12" x 14"

Table 1-4. DC-200/300 Single Scale Capacities

The external scale platform connector allows the DC-200/300 to connect with another larger capacity platform. A third scale can be added by using the optional Y cable to connect to the external scale connector. with the ability to add a force balance, barcode scanner, external printer and/or keyboard, your DC-200/300 becomes the hub of a sophisticated weighing system with huge capacities for expandability and flexibility.

2.0 Installation

This section describes the procedure for the installation and setup of the DC-200/300 counting scale.

2.1 Unpacking

⚠Caution *Do not turn scale upside down. Always work with scale on its side! Damage to the load cell can occur if the scale is turned upside down.*

Immediately after unpacking, visually inspect the DC-200/300 counting scale to ensure all components are included and undamaged. If any were damaged in shipment, notify Rice Lake Weighing Systems and the shipper immediately.

The DC-200/300 counting scale is packed in custom-fitted foam. After opening the box, remove all the components. Check the insides of the box carefully to make sure you have all of the pieces. The package should include the following:

- DC-200/300 counting scale
- Stainless steel platter
- AC power cord
- DC200/DC300 set-up tools CD-ROM
- Thermal head cleaning kit (DC-300 only)
- Thermal printer take-up reel (DC-300 only)
- DIGI certificate of quality
- Spare keysheet label

Figure 2-1. DC-200/300 Unpacked

Remove the bag protecting the scale and the dessicant bag. Next remove the protective film covering the front panel and the foam spacers between the scale case and the platform spider. Finally, place the stainless steel platter on top of the scale and seat it securely on the rubber stops.

After insuring that all the parts are present, store the original box in a safe location for possible future use. You will want the original packaging if you ever need to transport the scale or send it for servicing.

2.2 Repacking

If the DC-200/300 counting scale must be returned for modification, calibration or repair, it must be properly packed with sufficient cushioning materials. Whenever possible, use the original carton when shipping the DC-200/300. Damage caused by improper packaging is not covered by the warranty.

2.3 Setting Up

Place the scale on a solid, level surface away from fans, breezes, and sources of electrical interference.

Level the scale by turning the four adjustable legs located on the bottom of the scale while referencing the bubble level located on the front of the scale (see Figure 2-2).

Note:*To ensure a higher degree of scale stability, turn in all four adjustable legs before leveling. Turn out adjustable legs to level as needed.*

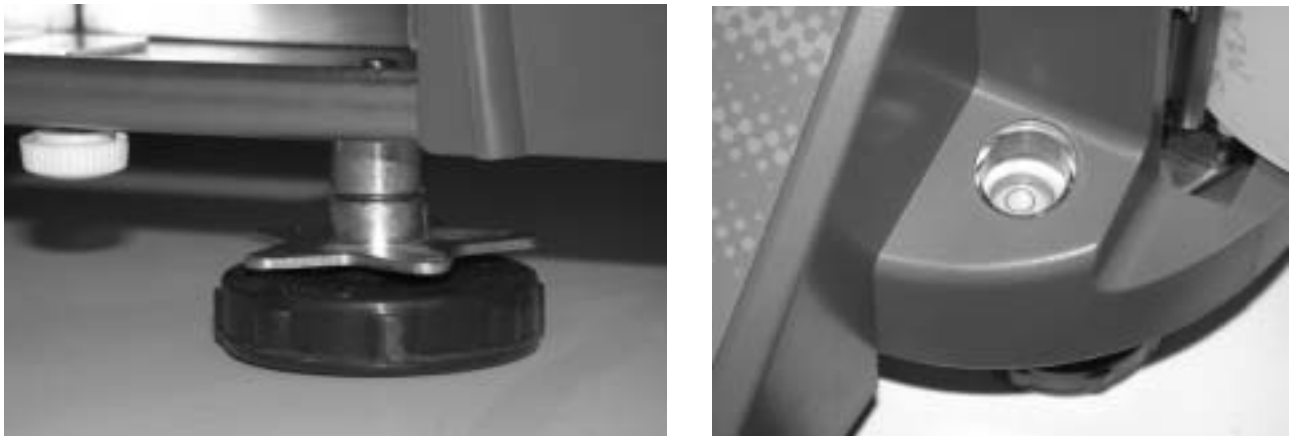


Figure 2-2. Leveling Feet and Bubble

2.4 Powering Up the DC-200/300

After plugging the power cord into the socket on the bottom of the scale (Figure 2-3) turn the power switch on the back of the bottom of the scale to the *ON* position. Generally when starting up the scale, if the power switch is currently *OFF*, turning it to the *ON* position powers up the scale. If the power switch is already in the *ON* position but the display has been powered down by pressing the ON/OFF key on the front, the scale can be reactivated by pressing the ON/OFF key again.

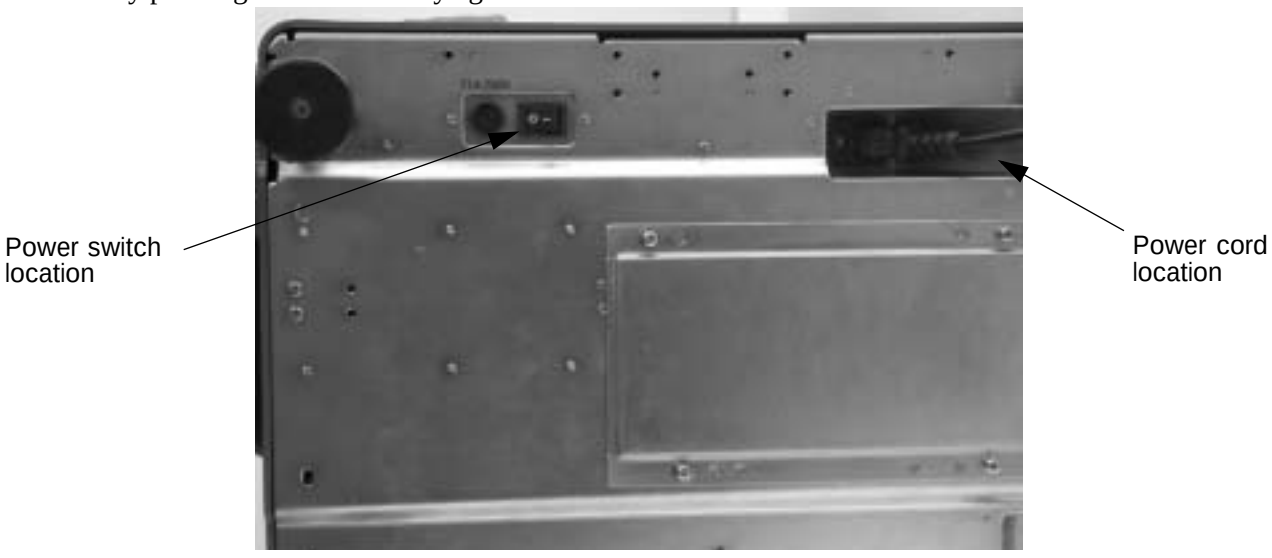


Figure 2-3. Power Switch and Power Cord Location

2.5 Initialize Scale Specifications

When first setting up the DC-200/300 scale, the specifications can all be set to their default values in one procedure. The scale has three possible sets of default values: Japan, U.S.A., and Standard. If the scale will be used in the United States, the best initial combination of settings will be the U.S.A. Remember that you can customize many functions of the scale to fit your customer's application by modifying these specification settings. For more information on the default settings of each specification and their optional settings, see Section 3.0 of the *DC-200/300 Operation Manual*.

Note: *This procedure clears the scale's SDRAM before initializing the specification settings to their default values. This means that all item code information, customized specification settings and custom free label formats will be erased by performing this procedure.*

1. Turn on the Span Switch and then power on the scale.
2. Press and hold and REZERO key while entering *124* from the numeric keypad to enter the Select Country Spec mode.

3. Use the << or >> key to scroll through the Country code options. (The options are 0-AA (Japan), 1- US (USA), and 3-STD (Standard). When the display shows 1-US, press the REPRINT key to select it.
4. The scale will next move to the Select Scale Type mode. Use the << or >> keys to select either *0 DC300* or *1 DC200*.

   Press the REPRINT key to confirm your selection.
5. The scale will indicate that it is reading the default country specs for the country setting you selected in Step 2 above.

6. The scale will next ask you if you want to clear all the SDRAM memory in the scale and intialize all the files and specifications. Press the CLEAR key to clear the memory and intialize the specifications or the TARE key to exit without reinitializing.

⚠ Caution *Pressing the Clear key will also erase any item code files, inventory records, and custom label formats you have programmed into the scale previously.*

   If you press the CLEAR key to reinitialize, the scale will display a message saying *PLEASE WAIT...*, while

the procedure is taking place.

7. Once the settings are reinitialized, the scale will go through its normal start-up segment check and then return to the Span Switch On Mode.

2.6 Start-Up Screens

The instructions below assume that you are using the scale as a stand-alone unit, with or without remote platforms. For information on using the DC-200/300 as a network workstation, see Section 6.0.

1. As the scale powers up it will display the current version of the firmware it is using. It also shows that the scale is currently being operated as a stand-alone unit.

2. After a test of the different elements of the display, the scale takes you to the stand-by screen in the Operation Mode. At the stand-by screen the *WEIGHT, UNIT WEIGHT* and *QUANTITY* displays show zeroes and the annuciator for the platform you are using is illuminated (A, B, C or D).

From this stand-by screen all of the basic weighing, counting and inventory operations can be performed (See Section 6.0 on page 77). Also, if any job sequence instructions have been programmed into the scale, the first operator instruction will be displayed on the second line of the display (Section 8.0).

3. If there is anything on the platform(s) and it exceeds the scale start range, a beep sounds, and the following error message appears.

Note: *The Initial Start Range settings are controlled by SPEC 631. The default setting is 0: +UNLIMITED TO 10% OF FULL SCALE.*

Remove the weight from the platform and press the CLEAR key to exit.

2.7 Calibration (Span Adjustment)

The DC-200/300 counting scale is a high-precision instrument. Although the scale needs very little maintenance, you may want to check the calibration after every month or so of normal usage. To do this you will need to have a test weight of approximately the total capacity of the scale (i.e. a 10 lb weight if you have a 10 lb capacity scale). After the scale is initially installed, put the weight on the platform and record the weight displayed. Then every month or so put the same weight on the scale and verify that it still reads the same.

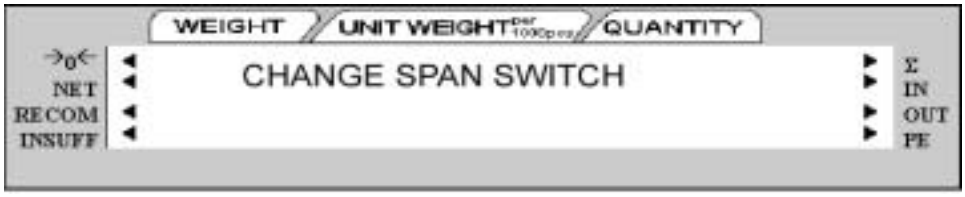
Many facilities have a technician come in and check their units with certified test weights four times a year. If you are ISO certified, you will want to check to see if your certification specifies more stringent requirements to stay in compliance. Your DIGI scale dealer has the calibrated test weights, expertise and experience to perform this task for you as well as to check other operating parameters of your scale and help you effectively integrate scales into your operations. If you do not know who your local DIGI dealer is, call us at 1-715-736-0002 and we will help you find someone who can provide you with on-site support.

Follow the instructions below to calibrate your DC-200/300 scale to ensure its continued accuracy.

1. Make sure the scale is turned off. Then press the span switch to reset it. See Figure 2-4 for location of Span switch).

Figure 2-4. Location of Span Switch

2. Turn the scale back on. the scale displays the message, *CHANGE SPAN SWITCH*.



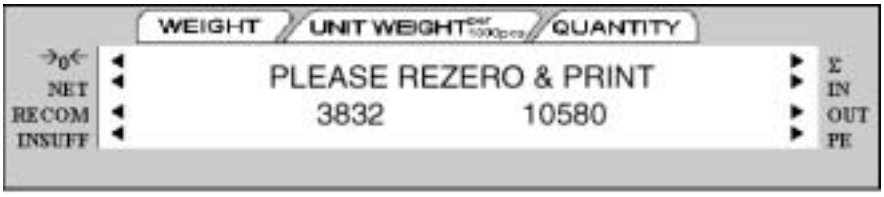
3. While pressing the REZERO key, enter 8715 from the numeric keypad to enter the calibration mode.

4. The scale display confirms that you are in the Calibration Mode.

5. Next, press the REPRINT key to enter the zero setting mode.

6. Choose which scale platform you are calibrating. The scale defaults to platform A. To choose another scale platform, press the SCALE key until the platform you want to calibrate is displayed.
7. Make sure that nothing is on the scale platform and press the CODE key to have the scale automatically search for the zero point.

8. The scale displays the zero point in the quantity window. It should be a value between 9000 and 11000. If the scale does not catch that range, you will need to call your local DIGI dealer or call us at 1-715-736-0002 for service assistance.



9. Press the REZERO key to clear the Internal Count shown in the weight window.

10. Press the REPRINT key to enter the weight calibration setting.

11. Put a calibrated weight on the platform equal to the total capacity of the scale (Example, for a 25 lb scale, place a 25 lb weight on the scale). Alternatively, you can enter the weight from the numeric keypad. The weight appears in quantity window. Press the REPRINT key to save the calibration data.

The display confirms that the span settings for calibration of the scale are being saved

Finally the screen returns to the initial *CHANGE SPAN SWITCH*.

12. Once the span switch is turned off, the scale automatically returns to operation mode. The scale should now be powered off and restarted for the new settings to take effect.

2.8 Setting Time and Date

Once you set the internal clock for the correct day and time it will continue to keep them, even when the scale is off, using the internal battery on the main board. The procedure below can also be used to adjust the time when moving from Standard to Daylight Savings Time or when the scale is moved to a new facility in a different time zone.

Note: *SPEC 05 - DATE ORDER and SPEC 06 -TIME FORMAT allow you to set the format for date and time that you prefer the scale to display. The defaults are Month/Date/Year for date and 12 hour for time. To change these specifications, see Section 2.9.1.*

1. Press the MODE key twice until the display shows *ITEM CODE PROGRAMMING*. The *S* annunciator, indicating the Programming Mode, will illuminate.
2. Press the + (plus) or – (minus) keys to scroll through the programming options until you see the *PROGRAM DATE* screen. Enter the current date using the numeric keypad. For months or days from 1 to 9, enter a leading zero. (Ex. In a MM-DD-YY format, May 8, 2003 would be entered as 050803.) Press the REPRINT key to store the data in temporary memory and move to the time programming mode.
3. Enter the current time using the numeric keypad. For numbers from 1 to 9, enter a leading zero. (Ex. In a 12 hour format, 3:06 pm would be entered as 0306.) If SPEC 06 - TIME FORMAT is set to a 12 hour format, you use the << and >> keys to toggle between AM and PM.
4. Press the CODE key to save the data or press the PIECES key followed by the CLEAR key to exit without saving the data.
5. To return to the Stand-by Screen in the Operation Mode, press the MODE key three times.

2.9 Configuration Settings

This section presents the setup and configuration of the DC-200/300 counting scale to be used specifically by distributors and service technicians. Configuring these specifications allow you to tailor the DC-200/300 to your specific applications.

Setting the specifications allows you to modify the functionality of the DC-200/300. Use the tables in this section to view the options you can modify. For example, if you want the function allowing you to print labels by pressing the +/- keys as well as pressing the REPRINT key to work on the DC-200/300, refer to the DC-200/300 specification table and locate *SPEC 34 - PRINT WHEN PRESS +/- KEY*. The default for SPEC 34 is *0*, which means that the *PRINT WHEN PRESS +/- KEY* function is turned off or disabled. To turn it on or enable it, change the SPEC setting to *1*.

2.9.1 Configuring Specification 141 and 142 Settings from the Scale Keyboard

The following tables list the DC-200/300 specifications and their corresponding default values. The default values are automatically set when the scale's memory is set by the dealer for the country of operation.

SPEC 00 through SPEC 71 (Table 2-1) are customer specifications and use the 141 access code, while SPEC 600 through SPEC 646 (Table 2-2) are weight and measurement specifications, and use the 142 access code. In programming specifications, the REPRINT and – (minus) keys allow you to move to the next or previous specification without saving changes to the SPEC code you were just in.

Customer Specification (141 Settings)

1. To configure customer specifications, press and hold the REZERO key and enter 141 using the numeric keypad. The first SPEC code, SPEC 0 is displayed, with *SP0: AUTO POWER SAVING* appearing in the first line of the weight display and its current setting (ex. *00>0: Disable*) appearing in the second line.

   If this is the SPEC that you want to modify, press >> or << keys to scroll through the possible settings. When the setting you want to store is displayed, press the + (plus) key to enter the change into temporary memory and move to the next SPEC code.
2. If you want to modify a SPEC other than SPEC 00 and you know the number of that SPEC code, enter the number of the SPEC code on the numeric keypad and press the REPRINT key. Otherwise, you can

use the + (plus) and – (minus) keys to scroll through the specifications until you find the one you want. Then make your changes per the instructions in Step 1.

3. To change another SPEC code before exiting, repeat Steps 1 and 2.
4. To save all the changed SPEC settings currently in temporary memory and exit to the Operation Mode, press the CODE key. You will hear a long beep to confirm that the scale is saving the change. The saving of the configuration file takes about 10 seconds, after which the scale will return to the Stand-By mode. To exit to the Operation Mode without saving the changes, press the TARE key.

⚠ Caution *If you power off the scale while the saving process is going on, you can clear the entire memory of the scale. Wait until the scale has returned to the Stand-by screen before performing any other functions.*

5. Power down scale using the power switch on the back of the bottom of the scale, not the ON/OFF key on the keyboard.
6. Power scale on to re-initialize the new specification settings.

SPEC	Description
00	Auto Power Saving When No Weight Change & No Key Press 0: Disable (DEFAULT) 1: 1 minute 2: 2 minutes 3: 3 minutes 4: 4 minutes 5: 5 minutes 6: 6 minutes 7: 7 minutes 8: 8 minutes 9: 9 minutes 10: 10 minutes 11: 11 minutes 12: 12 minutes 13: 13 minutes 14: 14 minutes 15: 15 minutes
01	Power Saving Type When set to 0, the backlight turns off when the scale goes into power-saving mode. When set to 1, the scale turns off entirely 0: Backlight Off (DEFAULT) 1: Power Off
02	Negative Counting 0: No 1: Yes (DEFAULT)
03	Extent of Insufficient Samples Sets the percentage of the full scale capacity that the initial counting sample has to exceed, otherwise the *INSUFF* lamp lights. 0: 0.1% (DEFAULT) 1: 0.2% 2: 0.0%
04	Set New Item Code During Registration (Operation) Mode 0: Yes (DEFAULT) 1: No
05	Date Order 0: Month/Day/Year (DEFAULT) 1: Day/Month/Year 2: Year/Month/Day
06	Time Format 0: 24 hour (DEFAULT) 1: 12 HOUR (am/pm)
07	Unit Weight Auto Recomputing 0: No (DEFAULT) 1: Yes
08	Sampling Times for Unit Weight Calculation Higher number samples improve accuracy in environments of higher vibration or breeze but also increase the time required to compute the unit weight. 0: 15 times (DEFAULT) 1: 20 times
09	Display Accuracy Unit Weight Calculation During Recomputing 0: No (DEFAULT) 1: Yes

SPEC	Description
10	Set Point Buzzer 0: Buzzer on (DEFAULT) 1: Buzzer off
11	Clear All Input Key in One Touch 0: Yes 1: No (DEFAULT)
12	Keep Lot Number in Registration (Operation) Mode 0: Allow (DEFAULT) 1: Inhibit
13	Job Sequence 0: Disable (DEFAULT) 1: Enable
14	Auto Exit From Add Mode 0: No 1: Yes (DEFAULT)
15	SIO Select Job Defines what the primary or standard input/output port on the scale is connecting to. 0: No operation (DEFAULT) 1: Force Balance 2: PC 3: Printer 4: Bar Code Scanner
16	RS-232C Baud Rate (SIO - Standard Input/Output Port) 0: 1200 baud 1: 2400 baud 2: 4800 baud 3: 9600 baud (DEFAULT) 4: 19200 baud 5: 38400 baud
17	RS-232C Data Length (SIO - Standard Input/Output Port) 0: 7 bits 1: 8 bits (DEFAULT)
18	RS-232C Parity Bit (SIO - Standard Input/Output Port) 0: None (DEFAULT) 1: Odd 2: Even
19	RS-232C Stop Bit (SIO - Standard Input/Output Port) 0: 1 bit (DEFAULT) 1: 2 bits
20	RS-232 Option Card 0: Not connected (DEFAULT) 1: Printer/Force balance 2: Force balance/Printer 3: Printer/PC 4: PC/Printer 5: PC/Force balance 6: Force balance/PC
21	RS-232 Baud Rate for 8 Pin DIN 1 Connector 0: 4800 1: 9600 (DEFAULT) 2: 19200 3: 38400

SPEC	Description
22	RS-232 Data Length for 8 Pin DIN 1 Connector 0: 7 bits 1: 8 bits (DEFAULT)
23	RS-232 Stop Bit for 8 Pin DIN 1 Connector 0: 1 bit (DEFAULT) 1: 2 bits
24	RS-232 Parity Bit for 8 Pin DIN 1 Connector 0: None (DEFAULT) 1: Odd 2: Even
25	RS-232 Baud Rate for 8 Pin DIN 2 Connector 0: 4800 1: 9600 (DEFAULT) 2: 19200 3: 38400
26	RS-232 Data Length for 8 Pin DIN 2 Connector 0: 7 bits 1: 8 bits (DEFAULT)
27	RS-232 Stop Bit for 8 Pin DIN 2 Connector 0: 1 bit (DEFAULT) 1: 2 bits
28	RS-232 Parity Bit for 8 Pin DIN 2 Connector 0: None (DEFAULT) 1: Odd 2: Even
29	RS-232 Connection to Force Balance (FB) 0: Disable (DEFAULT) 1: Enable
30	Type of Force Balance 0: Export (DEFAULT) 2:S-HG200 1: HR-603:S-HG300
31	PC/PRN Output Data Method 0: No operation 1: Counting 2: By +/-/Print Key (PC/PRN) (DEFAULT) 3: For both classes 1 & 2
32	Select External Printer Type 0: Eltron LP2622/LP2722 or TVP1000 (DEFAULT) 1: SE520 2: DP122 (Japan) 3: Epson output
33	External Eltron/TVP Printer Download Label Format 0: Enable (DEFAULT) 1: Disable
34	Print When Press +/- Key 0: Disable (DEFAULT) 1: Enable
35	PC Data With Header 0: Yes (DEFAULT) 1: No
36	PC Data Header Type 0: Code 9 - numeric headers (DEFAULT) 1: Title - alphabetic headers

SPEC	Description
37	IBM Keyboard Port 0: IBM Keyboard 1: Scanner
38	Barcode Scanner (BCS) With Header 0: Yes (DEFAULT) 1: No
39	Track Nprint (TNP) Time Out 0: 2 seconds (DEFAULT) 1: 8 seconds 2: 32 seconds
40	Selection of Network Interface 0: No network (RS-232) (DEFAULT) 1: Twisted Cable (Ethernet)
41	Port Number (IP Address) The port number can be set anywhere in a range from 1 to 255 (DEFAULT = 001 for DC-300) (DEFAULT = 002 for DC-200)
42	Set Scale Number The scale number can be set anywhere in a range from 0 to 999999 (DEFAULT = 00001)
43	Select Receipt or Label Paper Printing 0: Print paper receipt 1: Print label paper (DEFAULT)
44	Printing Speed For Receipt 0: Slow 1: Normal (DEFAULT) 2: High
45	Printing Speed for Label 0: Slow 1: Normal (DEFAULT) 2: High
46	Label Printing Density 0: Low 1: Medium 2: Medium High (DEFAULT) 3: High
47	Label Type 0: Gap (DEFAULT) 1: No Gap
48	Peel Sensor Function The peel sensor determines whether labels are set to be printed with the backing left on (0: disable) or with the backing peeled part way so that an individual label can be removed easily from the backing for immediate use (1: enable). 0: Disable 1: Enable (DEFAULT)
49	Number of Reprint Labels 0: No Label 1:1 Label (DEFAULT) 2:2 Labels
50	Selection of Label and Receipt Printing Operation 0: All operation (in/out/non-add) (DEFAULT) 1: Out (shipping operations) 2: In (receiving operations) 3: In and out 4: No printing

SPEC	Description
51	Human Readable Barcode Printing Format 0: No print (DEFAULT) 1: Print
52	Item Data Printing Format (DC-300 only) Sets the justification for printing the data associated with item codes in memory such as ID codes, part name, part number, and lot number 0: Centering 1: Start printing from the left (DEFAULT)
53	Date Title Print (DC-300 only) 0: No 1: Yes (DEFAULT)
54	Weight Data and Quantity Title Print (DC-300 only) 0: No print 1: Print (DEFAULT)
55	Printing of Factory Name on Label (DC-300 only) 0: No print 1: Print (DEFAULT)
56	Default Printing Label Factory Number (DC-300 only) Can choose a factory number in a range from 0 to 32. (DEFAULT = 01)
57	Printing of Factory Name Format (DC-300 only) 0: No centering 1: Centering (DEFAULT)
58	Selection of Label Logo Printing Status (DC-300 only) 0: No print (DEFAULT) 1: Logo 1 2: Logo 2 3: Logo 3 4: Logo 4
59	Selection of Barcode Type 0: Code 128A 1: Code 128B 2: EAN 128A 3: EAN 128B 4: CODE 39 (DEFAULT)
60	Auto Print Function 0: Between set point 1 and set point 2 1: Disable (DEFAULT)
61	Ethernet Function 0: No operation 1: Track N Print 2: Data Transfer Mode
62	RS232 - XON/XOFF 0: Disable 1: Enable
63	Sample Quantity Determines the number of pieces the scale assumes are on the platter when you press the PIECES key to calculate the Unit Weight. 0: 10 pieces (DEFAULT) 1: 25 pieces 2: 50 pieces 3: 100 pieces

SPEC	Description
64	Scale A <–> B Sets whether the unit weight determined by sampling on Scale A is automatically transferred to Scale B or not. 0: Manual (DEFAULT) 1: Auto
65	Unit of Pcs Weight Sets whether the unit weights are displayed per 1000 pieces or per 1 piece. For a further discussion of the benefits of each option, please see Section 5.4. 0: 1000 pieces (DEFAULT) 1: 1 piece
66	Not used
67	IMS Determines whether or not the scale automatically queries the DIGI Inventory Management Software (IMS) for all of the parameters associated with an Item Code when the CODE key is pressed. For more information on this option, please see Section 6.3.1. 0: Disable (DEFAULT) 1: Enable
68	EPSON II Changes the Epson label format from the default (all item information fields) to an abbreviated format with only selected fields. 0: Disable (DEFAULT) 1: Enable
69	4 Lot No. If disabled, allows a single lot number to be entered during weighing operations. If enabled, allows up to 4 lot numbers to be entered. These lot numbers are not written to the item database. 0: Disable (DEFAULT) 1: Enable
70	Upload Lot and Part Number If disabled, lot numbers and part numbers entered during weighing operations are not uploaded to the item database. If enabled, lot numbers and part numbers entered during weighing operations overwrite the information previously stored with the item code in the scale memory. 0: Disable (DEFAULT) 1: Enable
71	Text 11-16 TTL Allows you to use text fields 11-16 on total labels rather than just item labels. 0: Disable (DEFAULT) 1: Enable

Table 2-1. DC-200/300 (141) Settings

Weight and Measurement Specification (142 Settings)

1. Press and hold the REZERO key and enter 142 using the numeric keypad. *SP600* appears in weight display and its current setting (ex. *2>2: LB*) appearing in the second line. If this is the SPEC that you want to modify, press the >> or << keys to scroll through the possible settings. When the setting you want to store is displayed, press the + (plus) key to enter the change into temporary memory and move to the next SPEC code.
2. If you want to modify a SPEC other than SPEC 600 and you know the number of that SPEC code, enter the number of the SPEC code on the numeric keypad and press the REPRINT key. Otherwise, you can use the + (plus) and – (minus) keys to scroll through the specifications until you find the one you want. Then make your changes per the instructions in Step 1.
3. To change another SPEC code before exiting, repeat Steps 1 and 2.
4. To save all the changed SPEC settings currently in temporary memory and exit to the Operation Mode, press the CODE key. To exit to the Operation Mode without saving the changes, press the TARE key.
5. Power down scale using the power switch on the back of the bottom of the scale, not the ON/OFF key on the keyboard.

Power scale on to re-initialize the new specification settings.

Spec	Description
600	Scale Unit Specification 0: Gram 1: Kg 2: Lb (DEFAULT)
601	Display Resolution 0: 1/10000 (DEFAULT) 1: 1/5000 2: 1/2500)
602	Internal Count 0: 500,000 1: 1,000,000 (DEFAULT)
603	Minimum Display (Increment) for Scale A 0: 2 (DEFAULT) 1: 1 2: 5 3: 10
604	Weight Decimal Point Position for Scale A 0: 0 1: 0.0 2: 0.00 3: 0.000 (DEFAULT) 4: 0.0000

Spec	Description
605	Load Cell Sensitivity Selection in mV/V for Scale A 0: 4.00 mV/V 1: 3.76 mV/V 2: 3.52 mV/V 3: 3.28 mV/V 4: 3.04 mV/V 5: 2.80 mV/V 6: 2.56 mV/V 7: 2.32 mV/V 8: 2.08 mV/V 9: 1.84 mV/V 10: 1.60 mV/V 11: 1.36 mV/V 12: 1.12 mV/V (DEFAULT) 13: 0.88 mV/V 14: 0.64 mV/V 15: 0.40 mV/V
606	Load Cell Type for Scale A 0: Standard / Normal load cell (DEFAULT) 1: Abnormal load cell with large offset
607	A/D Board Type for Scale A 0: Normal (DEFAULT) 1: Prevent from small vibration / fast change in display 2: Prevent from medium vibration 3: Prevent from large vibration / slow change in display
608	External Scale B Connection 0: Disable (DEFAULT) 1: Enable
609	Minimum Display (Increment) for Scale B 0: 2 (DEFAULT) 1: 1 2: 5 3: 10
610	Weight Decimal Point Position for Scale B 0: 0 1: 0.0 2: 0.00 3: 0.000 4: 0.0000 (DEFAULT)
611	Load Cell Sensitivity Selection in mV/V for Scale B 0: 4.00 mV/V 1: 3.76 mV/V 2: 3.52 mV/V 3: 3.28 mV/V 4: 3.04 mV/V 5: 2.80 mV/V 6: 2.56 mV/V 7: 2.32 mV/V 8: 2.08 mV/V 9: 1.84 mV/V 10: 1.60 mV/V 11: 1.36 mV/V 12: 1.12 mV/V (DEFAULT) 13: 0.88 mV/V 14: 0.64 mV/V 15: 0.40 mV/V

Spec	Description
612	Load Cell Type for Scale B 0: Standard / Normal load cell (DEFAULT) 1: Abnormal load cell with large offset
613	A/D Board Type for Scale B 0: Normal (DEFAULT) 1: Prevent from small vibration / fast change in display 2: Prevent from medium vibration 3: Prevent from large vibration / slow change in display
614	External Scale C Connection 0: Disable (DEFAULT) 1: Enable
615	Minimum Display Increment for Scale C 0: 2 1: 1 (DEFAULT) 2: 5 3: 10
616	Weight Decimal Point Position for Scale C 0: 0 (DEFAULT) 1: 0.0 2: 0.00 3: 0.000 4: 0.0000
617	Load Cell Sensitivity Selection in mV/V for Scale C 0: 4.00 mV/V 1: 3.76 mV/V 2: 3.52 mV/V 3: 3.28 mV/V 4: 3.04 mV/V 5: 2.80 mV/V 6: 2.56 mV/V 7: 2.32 mV/V 8: 2.08 mV/V 9: 1.84 mV/V (DEFAULT) 10: 1.60 mV/V 11: 1.36 mV/V 12: 1.12 mV/V 13: 0.88 mV/V 14: 0.64 mV/V 15: 0.40 mV/V
618	Load Cell Type for Scale C 0: Standard / Normal load cell (DEFAULT) 1: Abnormal load cell with large offset
619	A/D Board Type for Scale C 0: Normal (DEFAULT) 1: Prevent from small vibration / fast change in display 2: Prevent from medium vibration 3: Prevent from large vibration / slow change in display
620	Tare Range Settings 0: 100% full scale (DEFAULT) 1: <50% full scale 2: <5% full scale
621	Digital Tare Setting 0: Disable 1: Enable (DEFAULT)

Spec	Description
622	Tare Accumulation 0: No (DEFAULT) 1: Yes
623	Digital Tare When Loaded 0: Allow (DEFAULT) 1: Inhibit
624	Tare Subtraction (for Load Tare Only) 0: Yes (DEFAULT) 1: No
625	Tare Addition (for Load Tare Only) 0: Yes 1: No (DEFAULT)
626	Tare Value Exchange (for Load Tare) 0: Yes (DEFAULT) 1: No
627	Zero Tracking When Tare 0: Yes (DEFAULT) 1: No
628	Tare When Scale Change 0: Old Tare (DEFAULT) 1: New Tare
629	Weight Reset When Tare 0: Yes (DEFAULT) 1: No
630	Auto Clear Tare When Rezero 0: No (DEFAULT) 1: Yes
631	Initial Start Range Settings 0: +Unlimited to 10% full scale (DEFAULT) 1: +/- 2% full scale 2: +/- 10% full scale
632	Zero Range Settings 0: +Unlimited to 10% full scale (DEFAULT) 1: +/- 2% full scale 2: +/- 10% full scale
633	Zero Lamp Lighting Method 0: Gross weight (DEFAULT) 1: Net weight
634	Rezero When Changing Scale 0: No rezero (DEFAULT) 1: Rezero
635	Stability Check When Changing Scale 0: Stability check (DEFAULT) 1: No stability check
636	Internal Count Resolution (IR) Protected by Span Switch 0: No (DEFAULT) 1: Span switch protect
637	Calibration/Default SPEC/SPEC 142 Mode Protected by Span Switch 0: Span switch protection 1: No protection (DELETE)

Spec	Description
638	Display at Minus Weight 0: Minus display (DEFAULT) 1: Masked display
639	Masked Display at Minus Weight 0: Gross weight (DEFAULT) 1: Net weight
640	Overweight Masked 0: At +1D (DEFAULT) 1: At + 9D
641	Selection of Scale Starting Method 0: Auto start (DEFAULT) 1: Manual start
642	Weight Unit Convert 0: Yes (DEFAULT) 1: No
643	Gross Mode Display 0: Yes (DEFAULT) 1: No
644	Selection of Decimal Point Type Sets whether the decimal point is displayed as a period (U.S. usage) or a comma (European, Latin American, Asian usage) 0: Period display (DEFAULT) 1: Comma display
645	Selection of Scale Type 0: DC-300 scale 1: DC-200 scale
646	Automatic Unit Weight Clear Conditions 0: Disable (DEFAULT) 1: Over net 5D & gross 21D & weight stable 2: >=net 1D & weight stable 3: >=net 1D & quantity > 0 & weight stable

Table 2-2. DC-200/300 (142) Settings

2.9.2 Configuring Spec 141 and 142 Settings Using the Spec Upload Utility

The DC-300 Utility Program includes a module called “Spec Upload”. This handy program allows you to more easily do four useful things:

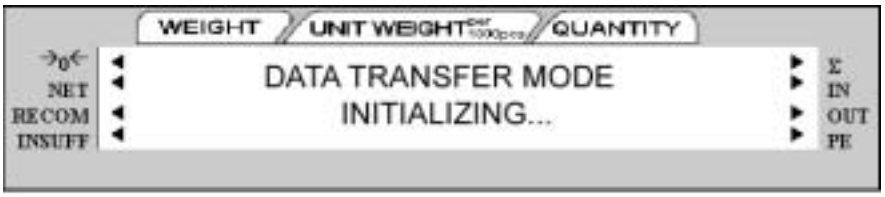
- change one or any number of spec settings from your computer screen and then upload them to a DC-200/300 rather than change them from the scale’s keyboard.
- save the spec setting currently programmed in the DC-200/300 to a named file on your computer from which they can be restored to the same DC-200/300 later or uploaded to other DC-200/300s so that their spec settings match.
- save spec settings optimized for a particular task, department or facility to a named file on the computer. This complete set of spec settings can then be uploaded to a DC-200/300 whenever the scale’s use or location changes, rather than have to go through and manually change each spec. It can also be used to save a backup of your spec settings if you should need to send your scale to be serviced.

Return all the scale’s spec settings to the default settings by uploading the defaults from the computer to the scale.

Note: *For information on how to install the DC-300 Utility Program on your computer, Section 8.2 on page 101 If you have not already set up your computer and the scale to be able to communicate to each other using the DC-200/300’s Ethernet connection, please see Section 6.1. If you are unsure of how to work with TCP/IP connections or have difficulties, see your Network Administrator for help.*

Change Spec Settings Using the Spec Upload Utility

1. With the scale turned on and at the Stand-by screen, press REZERO + SHIFT UP. The scale display will indicate that it is changing to the data transfer mode.



2. The scale display will next indicate that it is ready for the data transfer mode after the scale is restarted.

Turn the scale off and then on again, using the on/off switch located on the bottom of the scale at the back

3. After you restart the scale and it goes through its startup sequence, the scale will show that the data transfer mode is ready.

4. On your computer, open the Spec Upload program.

Note: *If you have not yet installed the DC-300 Utility Program, see Section 8.2.*

At the opening screen of the Spec Upload program, you have the option to Load the Default Setting file; load from a named, saved file on your computer; or read the spec settings from the DC-200/300 scale connected to your computer.

Select the radio button for *Read From Scale*. Also make sure that the Scale No. radio button for 192.168.0.1 (the IP address of the DC-300) has been selected if you are using the DC-300 or 192.168.0.2 if you are using the DC-200.

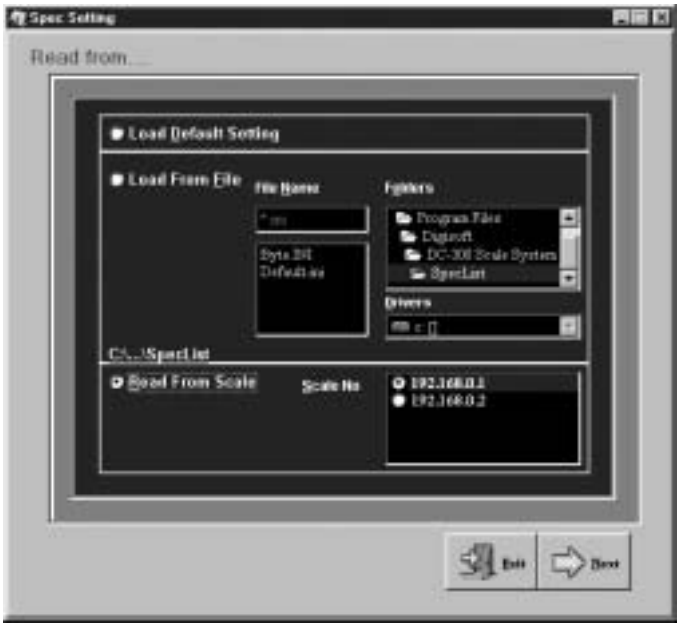


Figure 2-5. Read From Scale Screen

5. Click on the Next button at the bottom of the Spec Setting dialog box. The program will confirm *Spec reading in progress, please wait...*, showing that it is uploading the current spec settings from the scale. The Spec Upload program will next display the Spec Setting screen, showing the values of the first four SPECs programmed in the scale.

Figure 2-6. User Specification Screen

6. To change the setting of one or more of the first four specs, use the pull down list box for that spec to choose among the available settings for that specification. To move to the next four specifications, click on the Next button at the bottom of the dialog box.
7. Once you have made all the needed changes to the specifications, you can upload the changed specs to

the scale and also save the new configuration to a named file on your computer for future updating of this scale or matching the specifications on another DC-200/300.

To save the new configuration settings, click on the Save button at the bottom of the dialog box. You will be prompted to give this configuration a file name. The next time you open the DC-300 Spec Upload program, this file will show as one of the ones available to upload to any DC-200/300. After assigning a file name, click on the Save button to save the file. You will be returned to the main Spec Upload Utility screen.

8. To upload the changed spec settings to the DC-200/300 currently connected to your computer, click on the Upload button. The utility will ask you whether you want to update one specific spec or all the specs.

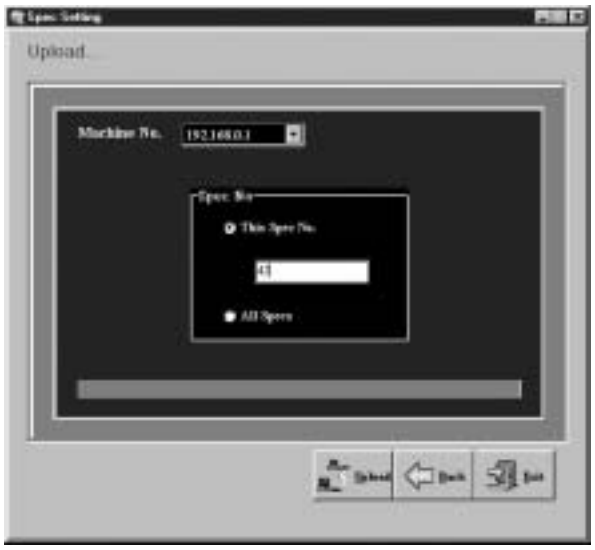


Figure 2-7. Upload Screen

To update only one spec, type its number into the box. To update all the specifications, select the radio button for *All Specifications*. Click on the Upload button.

9. The program will confirm with the message *Successfully Sent* while the scale display shows the following.

Warning *If you power off the scale while the saving process in going on, you can clear the entire memory of the scale!*

Once the scale has completed the upload of the change(s), it will display the following:

The scale should be powered down and then powered back up to initialize the new changes. When the scale is powered back up, it will still be in the *DATA TRANSFER MODE - READY* state. To exit the Data Transfer Mode, continue with the instructions below.

10. To exit the Data Transfer Mode on your DC-200/300 scale and return it to normal weighing mode, press REZERO + SHIFT DOWN. The scale will briefly display a message saying that it is exiting the Data Transfer mode.

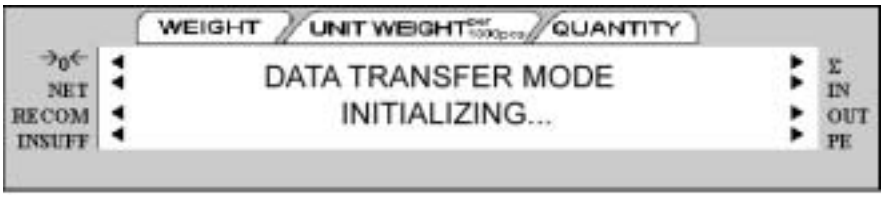
11. Next you will be prompted to restart the scale.

Once you have restarted the scale, you will be returned to normal weighing operations.

Uploading Saved Spec Configurations to a DC-200/300

To download the spec settings from a DC-200/300 to the computer, see Section 2.9. If you already have a saved configuration file of spec settings, use the instructions below to upload the settings to a DC-200/300. This could be to change the settings of a DC-200/300 to fit a particular task, department or facility or it could be to take the spec settings configuration from one DC-200/300 and upload it to other DC-200/300's so that their settings match.

1. With the scale turned on and at the Stand-by screen, press REZERO + SHIFT UP. The scale display will indicate that it is changing to the data transfer mode.



2. The scale display will next indicate that it is ready for the data transfer mode after the scale is restarted.

   Turn the scale off and then on again, using the on/off switch located on the bottom of the scale at the back.

3. After you restart the scale and it goes through its startup sequence, the scale will show that the data transfer mode is ready.

4. On your computer, open the Spec Upload program.

Note: *If you have not yet installed the DC-300 Utility Programs, see "Installing the DC-300 Utility Program".*

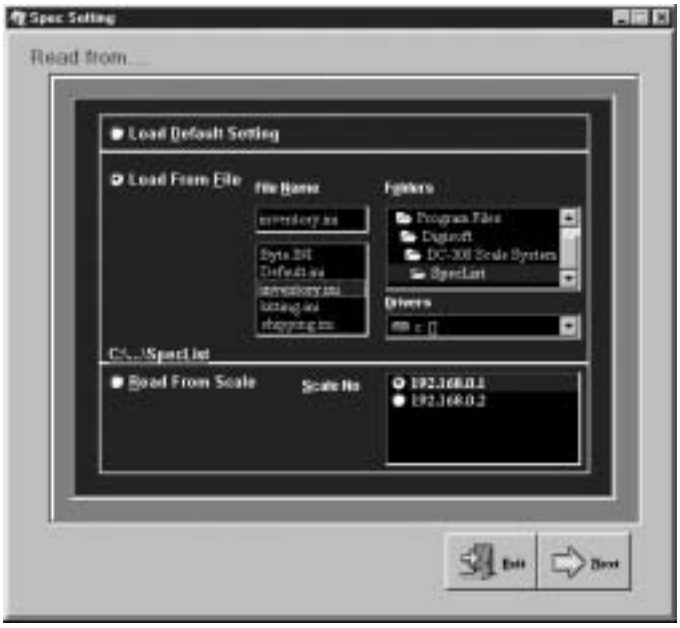


Figure 2-8. Load From File Screen

At the opening screen of the Spec Upload program, you have the option to Load the Default Setting file; load from a named, saved file on your computer; or read the spec settings from the DC-200/300 scale connected to your computer.

- to load the default specification settings to the scale, click the radio button next to *Load Default Setting*. When you installed the DC-300 Utility Program a file named *Default.ini* was copied into the Digisoft folder on your computer. To see what the default settings are for the scale specifications, see Section 2.5.
- to load a specification file you have previously saved to your computer, select the radio button for *Load From File*. If the named file you want to upload to the scale appears in the *File Name* box, click on it to select it. If the file you want does not appear in the *File Name* box, use the *Drives* and *Folders* explorer windows to find the file you are looking for.

  Once you have selected the spec configuration file to be uploaded and it appears under *File Name*, click on the *Next* button at the bottom of the screen to continue.

5. In the next screen you have the option to change any of the spec settings saved in this file before uploading.

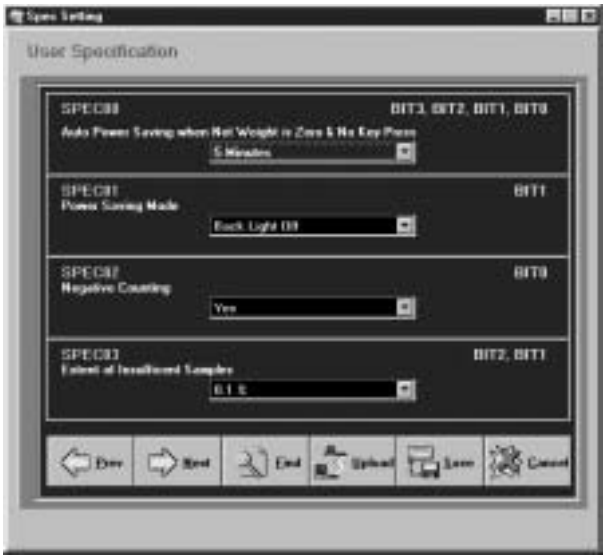


Figure 2-9. User Specification Screen

To upload to the scale without making any changes, click on the Upload button. To change the setting of one or more of the first four specs, use the pull down list box for that spec to choose among the available settings for that specification. To move to the next four specifications, press the Next button at the bottom of the dialog box.

6. Once you have made all the needed changes to the specifications, you can upload the changed specs to the scale and also save the new configuration to a named file on your computer for future updating of this scale or matching the specifications on another DC-200/300.

   To save the new configuration settings, click on the Save button at the bottom of the dialog box. You will be prompted to give this configuration a file name. The next time you open the DC-300 Spec Upload program, this file will show as one of the ones available to upload to any DC-200/300. After assigning a file name, click on the Save button to save the file. You will be returned to the main Spec Upload Utility screen.

7. To upload the changed spec settings to the DC-200/300 currently connected to your computer, click on the Upload button. The utility will ask you whether you want to update one specific spec or all the specs. To update only one spec, type its number into the box. To update all the specifications, select the radio button for all specifications. Click the Upload button.

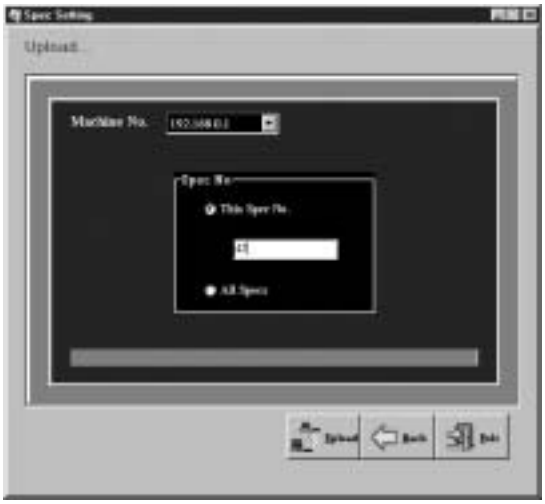


Figure 2-10. Upload Spec Settings

8. The program will confirm with the message *Successfully Sent* while the scale display shows the following.

Warning *If you power off the scale while the saving process in going on, you can clear the entire memory of the scale!*

9. Once the scale has completed the upload of the change(s), it will display the following:

The scale should be powered down and then powered back up to initialize the new changes. When the scale is powered back up, it will still be in the *DATA TRANSFER MODE - READY* state. To exit the Data Transfer Mode, continue with the instructions below.

10. To exit the Data Transfer Mode on your DC-200/300 scale and return it to normal weighing mode, press REZERO + SHIFT DOWN. The scale will briefly display a message saying that it is exiting the Data Transfer mode.

11. Next you will be prompted to restart the scale.

Once you have restarted the scale, you will be returned to normal weighing operations.

2.10 Modes of Operation

The DC-200/300 has four main modes of operation:

- Operation Mode – where all the basic weighing and counting operations are performed (also called the Registration Mode).
- Report Mode – where item, inventory, and shelf location reports can be printed.
- Program Mode –where item data, factory name, and other data can be programmed into the memory of the scale.
- Password Mode – where you can set passwords that will be required for a scale operator to use certain functions of the scale.

A fifth mode of operation, Service Mode, is used by your DIGI Dealer or authorized service technician to perform initial programming and troubleshooting operations.

Which mode you are in is displayed on the right-hand side of the display panel by the following codes:

Mode	Annunciator
Operation Mode	Default mode, no letter displayed
Report Mode	X
Program Mode	S
Password Mode	The code for the mode you are password protecting is displayed
Service Mode	Z

Table 2-3. DC-200/300 Modes of Operation

3.0 Maintenance

The following section describes basic maintenance involved with the DC-200/300 counting scale.

3.1 Hardware Testing

3.1.1 RAM and Communications Port Testing

In the Service Mode you can cycle through a set of hardware tests that will check reading/writing to RAM, the RS-232 and Ethernet ports, and the ROM Checksum. If any of these tests fails, contact Rice Lake Weighing Systems for help in determining the problem.

RAM Test

1. From the Stand-by Screen press the MODE key until the display shows *SERVICE MODE*. The Z annunciator, indicating that you are in the service Mode will illuminate.While holding down the REZERO key, press *001* to enter the hardware testing mode.
2. The first test is the RAM Read/Write Test. While the test is under way, the following is displayed.

If reading and writing to the scale's RAM test successfully, the display reads:

If the read/write test is unsuccessful, the display will read:

RS-232 Main Port Test

In order to perform the RS-232 port testing, you will need to have or make two test connectors with pins 4 and 5 connected as follows:

Figure 3-1. Test Connector for RS-232 Ports

1. Press the + (plus) key. The display shows *SIO LOOP BACK TEST.*
2. Plug the test connector into the RS-232 port in the main interface board (the lower RS-232 port, next to the IBM keyboard port.

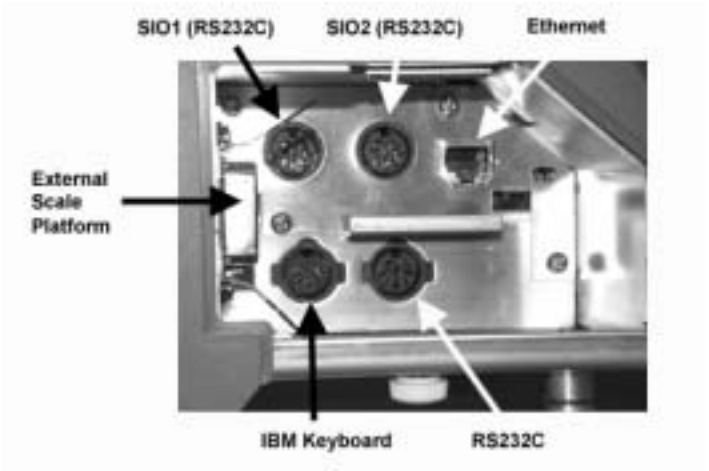


Figure 3-2. DC-200/300 Interface Ports

If the port tests correctly, the following message is displayed.

If the loop back test of the port fails, you will see the following:

RS-232 Option Card Test

Your DC-200/300 comes standard with the option board installed that gives you two additional RS-232 ports. You will need the two test connectors described in the RS-232 Main Test Port section on the previous page in order to perform this test.

1. Press the + (plus) key to move to the RS-232 Option Card test.
2. Plug the RS-232 test connectors into both of the ports on the option card (the two upper RS-232 ports next to the Ethernet port marked SIO1 and SIO2).

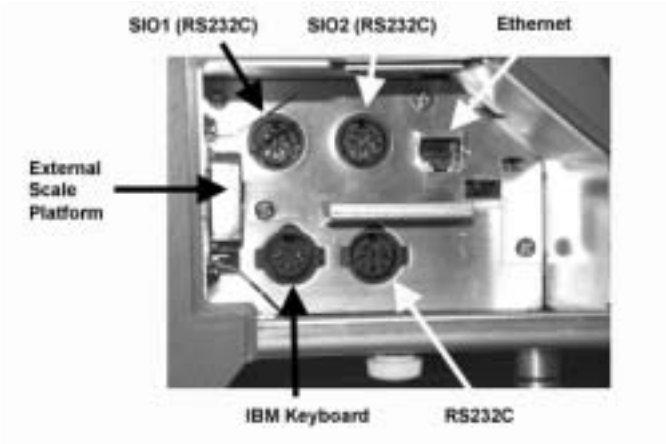
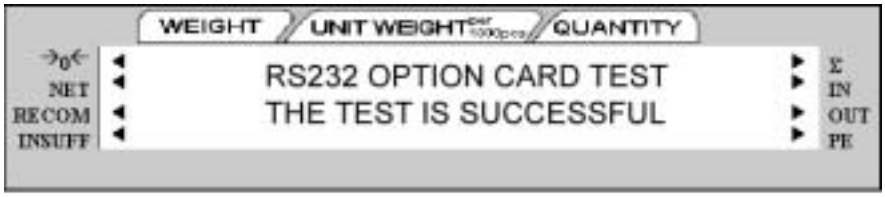
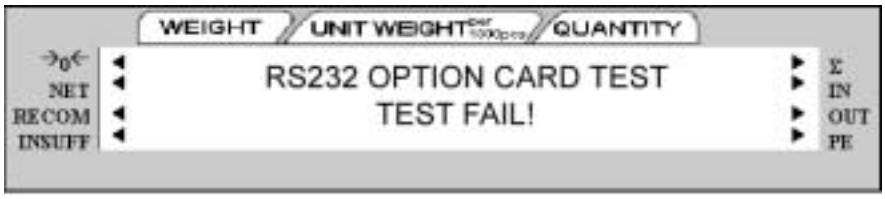


Figure 3-3. Option Board RS-232 Ports

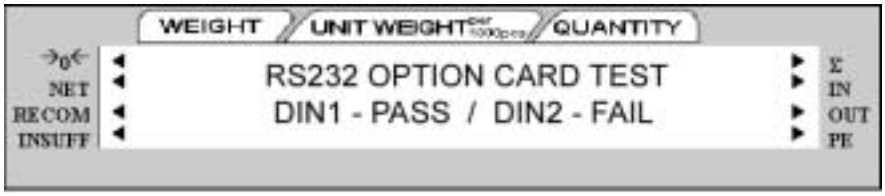
The scale will perform the test. If it completes successfully, you will see the following display:



If the test fails, the display will indicate which port(s) did not test successfully. If both ports fail, the display will read as follows:



If only one port fails, the message will show which one was unsuccessful by displaying the following:



Ethernet Port Test

1. Press the + (plus) key to move to a test of the Ethernet port. If the port tests successfully, the following message is displayed.

If the test fails, the scale displays the following screen:

ROM Checksum Test

Press the + (plus) key to move to the ROM Checksum test for the firmware. While the test is being performed, you will see;

When the test completes successfully, the scale display will switch to:

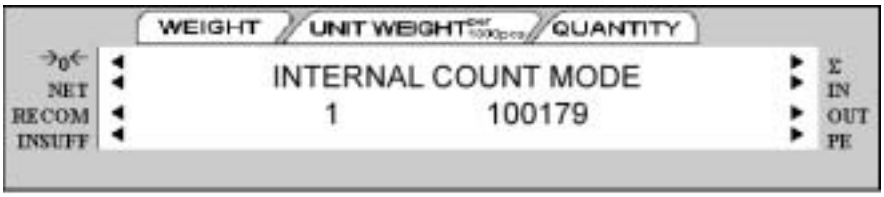
Exiting the Hardware Test Mode

At this point you can press the + (plus) key again to repeat the cycle of hardware test beginning with the RAM test, or you can press the TARE key to return to the Service Mode. Then press the MODE key twice to return to the Stand-by screen.

3.1.2 Internal Test Count

This test allows you to see more detail on the scale's internal resolution than you can see on the weight and counting display. It may allow you to tell if there is a problem with the load cell being misaligned or if something is rubbing against a load cell during weighing operations. If the scale constantly does not return to zero during weighing, you can also rezero the internal counting using this procedure.

1. From the Stand-by screen, press the MODE key until the display shows *SERVICE MODE*. The Z annunicator, indicating that you are in the Service Mode, illuminates.
2. While holding down the REZERO key, press *009* to start the Internal Count test. The scale display shows the results of the test:



   If the number on the left is not returning to zero, press the REZERO key. Place a weight on the scale platform. If the scale does not respond quickly and repeatedly by increasing the counts when you place a weight on the scale, you may want to check the load cells.
3. Press the TARE key to return to the *SERVICE MODE*. Then press the MODE key twice to return to the Stand-by screen.

3.1.3 Span Switch Status Test

From the Stand-by screen, press the MODE key until the display shows *SERVICE MODE*. The Z annunicator, indicates that you are in the Service Mode and illuminates.

1. While holding down the REZERO key, press *284* to display the Span Switch status. The scale display shows the current status of the Span Switch.

2. Press the TARE key to return to the Service Mode. Then press the MODE key twice to return to the Stand-by screen.

3.1.4 Voltage Checkpoints

There are four voltage checkpoints on the main board. Below are listed the reference voltage levels commonly used.

Voltage Point	Voltage	Purpose
V_{CC}	5.0 V	Provides voltage for most of the IC
V_{TH}	24 V	Provides voltage primarily to the thermal print head
V_{BB} (off state)	2.5 V	Provides backup voltage for the RAM IC when the power is off
V_{BB} (on state)	4.5 V	Provides backup voltage for the RAM IC when the power is on

Table 3-1. Voltage Checkpoints

The tolerance of all the voltages shown is about ± 5%, except V_{TH} which is +2% and -5%.

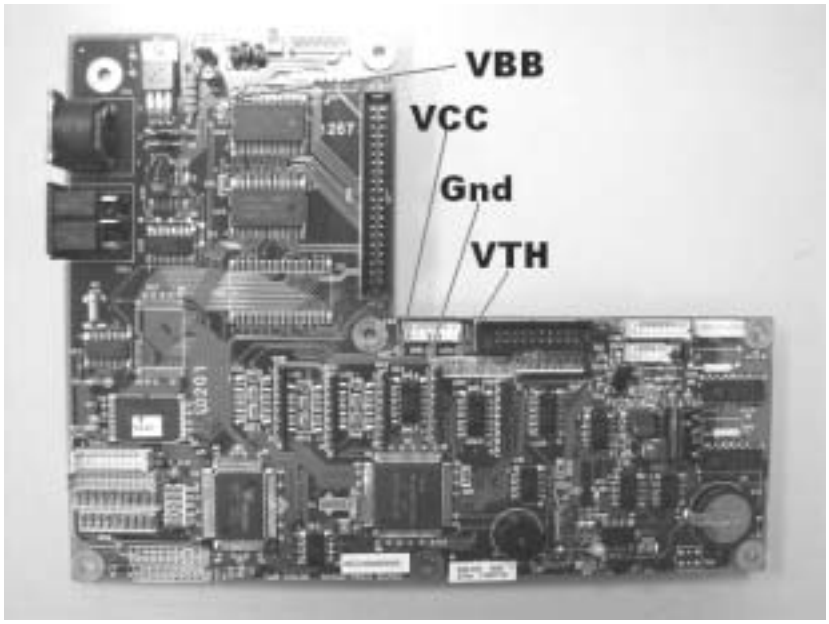


Figure 3-4. Voltage Checkpoints

3.2 Internal Printer Tests and Adjustments (DC-300 only)

The following sections describe internal printer tests and the appropriate adjustments.

3.2.1 Checking or Rezeroing the Thermal Head Usage Counter

The DC-300 maintains a usage counter for the thermal head of the built-in printer. It displays the usage in thousands (incrementing 1 for every 1000 print operations). The counter can be rezeroed after the replacement of the print head in order to track usage on the new one.

1. From the Stand-by screen, press the MODE key until the display shows *SERVICE MODE*. The Z annunicator, indicating that you are in the Service Mode, lights. While holding down the REZERO key, press *0823* to display the Thermal Head Usage Counter.

   In the example shown above, the counter is indicating that 47,000 print operations have taken place.
2. To rezero the counter, press the CLEAR key followed by the CODE key.
3. Press the TARE key to return to the Service Mode. Then press the MODE key twice to return to the Stand-by screen.

3.2.2 Adjusting the Printer Label Gap Sensor

The built-in printer in the DC-300 has a label gap sensor designed to detect the gap between labels on a label roll. This allows the printer to identify the starting position of each label so that only one label is issued at a time during a print operation.

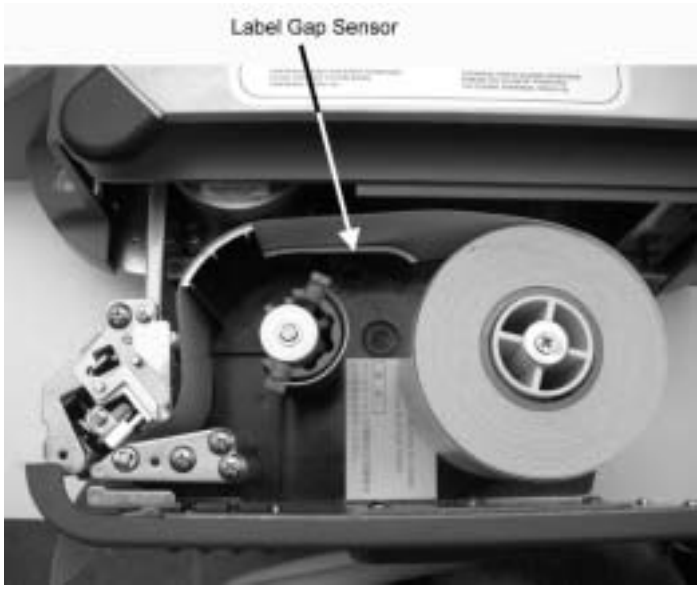


Figure 3-5. Label Gap Sensor

A resistor detects a variation in voltage between the label and the backing paper.

Figure 3-6. Label Gap Sensor Resistor Location

Depending on the material of the label and the backing material of the label roll, labels will have a gap sensor voltage of between 2.5 V and 5.0 V while the backing material will have a gap sensor voltage of between 1.0 V and 2.5 V. If the printer begins to misfeed labels, the voltage threshold can be reset as described below.

Threshold Voltage

The sensor needs a threshold voltage (also called a gap reference voltage) at which it can distinguish between a label and a gap between labels. Any portion on the roll with a gap sensor voltage above the threshold voltage will be considered by the printer to be a label, while portions of the roll below the threshold voltage will be considered gaps between labels. The threshold voltage is computed according to the following formula:

Threshold Voltage = (highest detected value + lowest detected value) / 2

The threshold voltage is computed automatically by the scale whenever the FEED key is pressed. However, it the printer is misaligning the labels because it does not accurately detect the gap, the threshold voltage can also be set manually.

1. At the Stand-by screen, hold down the REZERO key while entering *516* to enter the Threshold Voltage

Setting mode. The following will appear on the display.

Figure 3-7. Gap Sensor Voltage Adjustment

2. You can test the voltage variation between the label and the backing by manually pulling labels past the sensor. The voltage level of the label should be low while the voltage of the backing material in the gap is high. Note the voltages on the display for the label stock you are using.
3. Use the << and >> keys to adjust the Threshold Voltage used by the printer. Set the threshold at the midpoint between the readings you noted for the labels and the backing material on your label stock.
4. To exit the Threshold Voltage Setting mode and return to the Stand-by screen, press the TARE key.

Peel Sensor Voltage

When label stock is loaded into the DC-300's built-in printer, you can choose to have the labels print out with the label backing intact or to print with the label partially peeled off of the backing. (See the *DC-300 Operation Manual* for information on how to load the labels for peel-off and the SPEC settings involved.) Similar to the Gap Sensor's Threshold Voltage (see Section 3.2.2), the Peel Sensor determines where the end of the label is so that the backing is peeled off just to the right point.

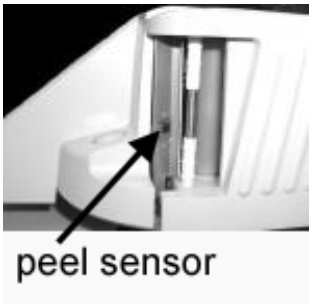


Figure 3-8. Peel Sensor Adjustment Location

During normal operation, the Peel Sensor Voltage is set automatically by pressing the FEED key. Sometimes, however, changes in temperature or humidity cause the sensor to misread the label position. If labels are not peeling off completely or if the peel off position is going over into the next label, the Peel Sensor Voltage can be adjusted by following the procedure below:

1. At the Stand-by screen, hold down the REZERO key while entering *515* to enter the Peel Voltage Setting mode. The following will appear on the display.

2. At this point you've got three choices:

- Press the REPRINT key to have the scale automatically reset the voltage value and exit to the Stand-by screen.
- Enter a numeric value for a new Peel Sensor Voltage using the numeric keys. Then press the CODE key

to save the change and exit to the Stand-by screen.

- Press the TARE key to exit to the Stand-by screen without making any changes.

3.2.3 Adjusting the Printing Position

If the thermal print head gets misaligned vertically, the vertical position can be adjusted using the following procedure.

1. At the Stand-by screen, hold down the REZERO key while entering *514* to enter the Adjust Printing Position mode. The following message appears:

2. Print positions are measured in dots, where 1 vertical dot = 0.155mm.

- To adjust the print position upward, enter the number of dots you want to move from the numeric keypad.
- To adjust the print position downward, enter the number of dots from the numeric keypad and press the - (minus) key.
- To exit the Adjust Printing Position mode without making any changes, press the TARE key.

3. Finally, press the CODE key to store the new value and exit to the Stand-by screen.

3.3 Clearing the Scale Memory

This procedure allows you to clear the static RAM and all the Item, Inventory, and Label Format files. You may want to use the DC-300 Utility Program to copy your scale specifications settings and item files to a PC and save them so that they can transferred to another scale or re-downloaded to the scale whose memory you are clearing. (See *DC-200/300 Operation Manual*).

1. Power off the scale.
2. Power the scale back on while simulatenously pressing both the REZERO and TARE keys. The display will offer you the choice of clearing the memory or exiting without clearing the RAM and intializing the scale.

⚠ Caution *This procedure will erase all Item, Inventory, and Label Formatting information in your scale. Be sure that this is what you want to do before proceeding.*

3. Press the CLEAR key to clear the memory or press the TARE key to exit without clearing the memory and simply return to the Stand-by screen in Weighing Mode. If you choose to clear the memory, the scale

display will show the message, *PLEASE WAIT...* until the procedure is done.

Do not power off the scale while the memory clearing operation is in process.

4. Once the memory is cleared, the scale will go through its standard start-up segment check and then return to the Stand-by screen in the Weighing Mode.

3.4 Technical Drawings

3.4.1 DC-300 Exploded View

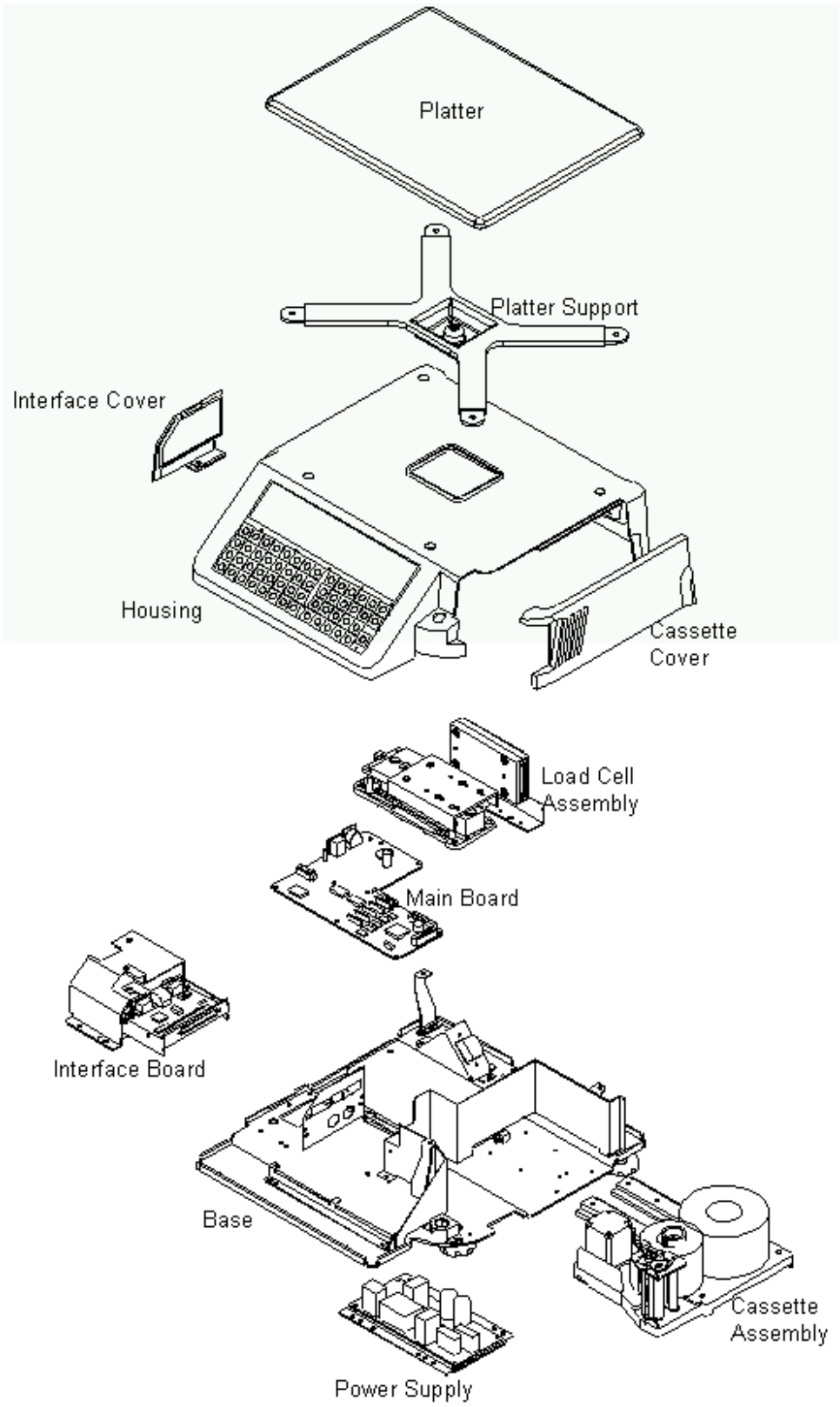


Figure 3-9. DC-300 Exploded View

3.4.2 DC-300 Block Diagram

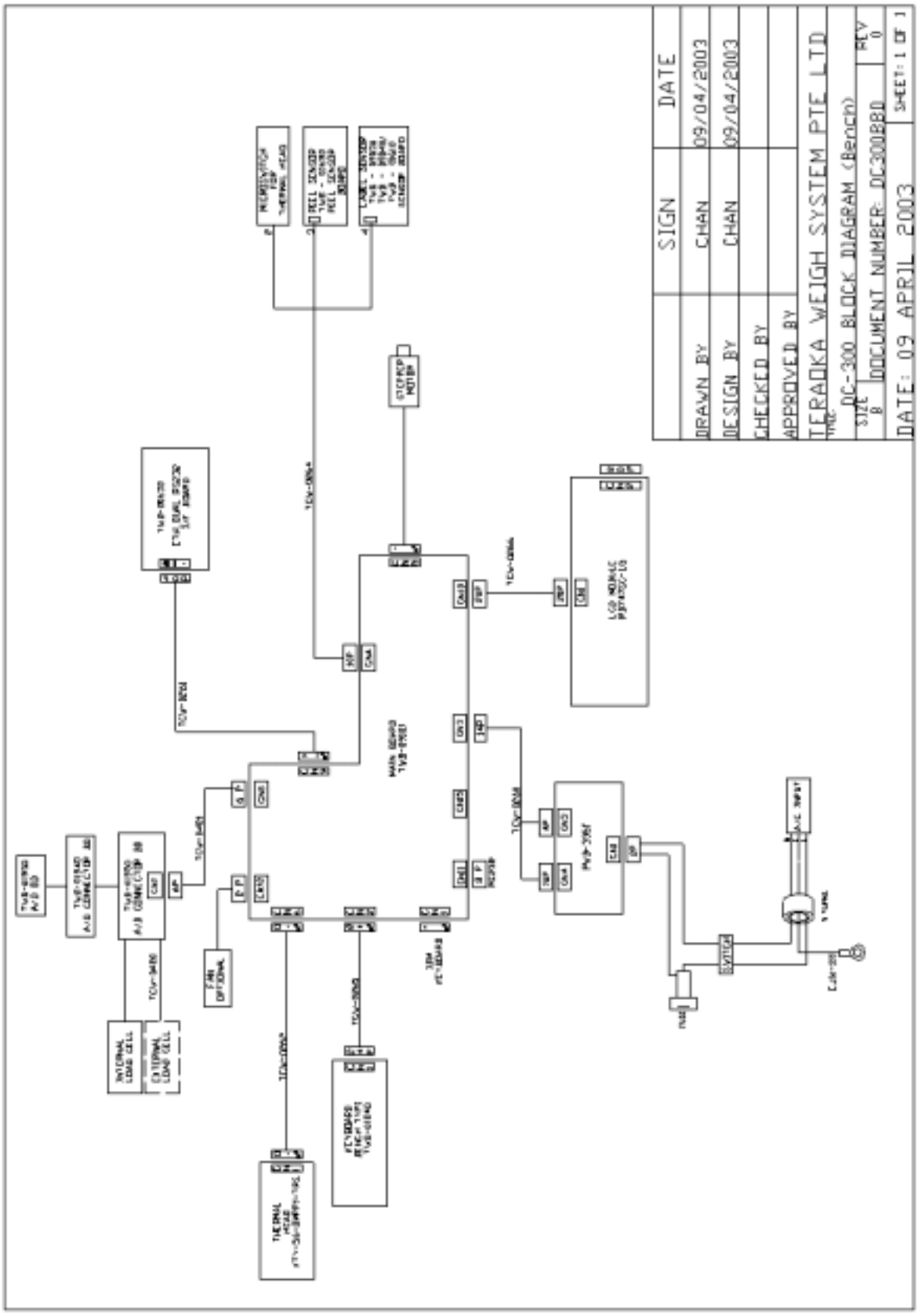


Figure 3-10. DC-300 Block Diagram

3.4.3 DC-200 Block Diagram

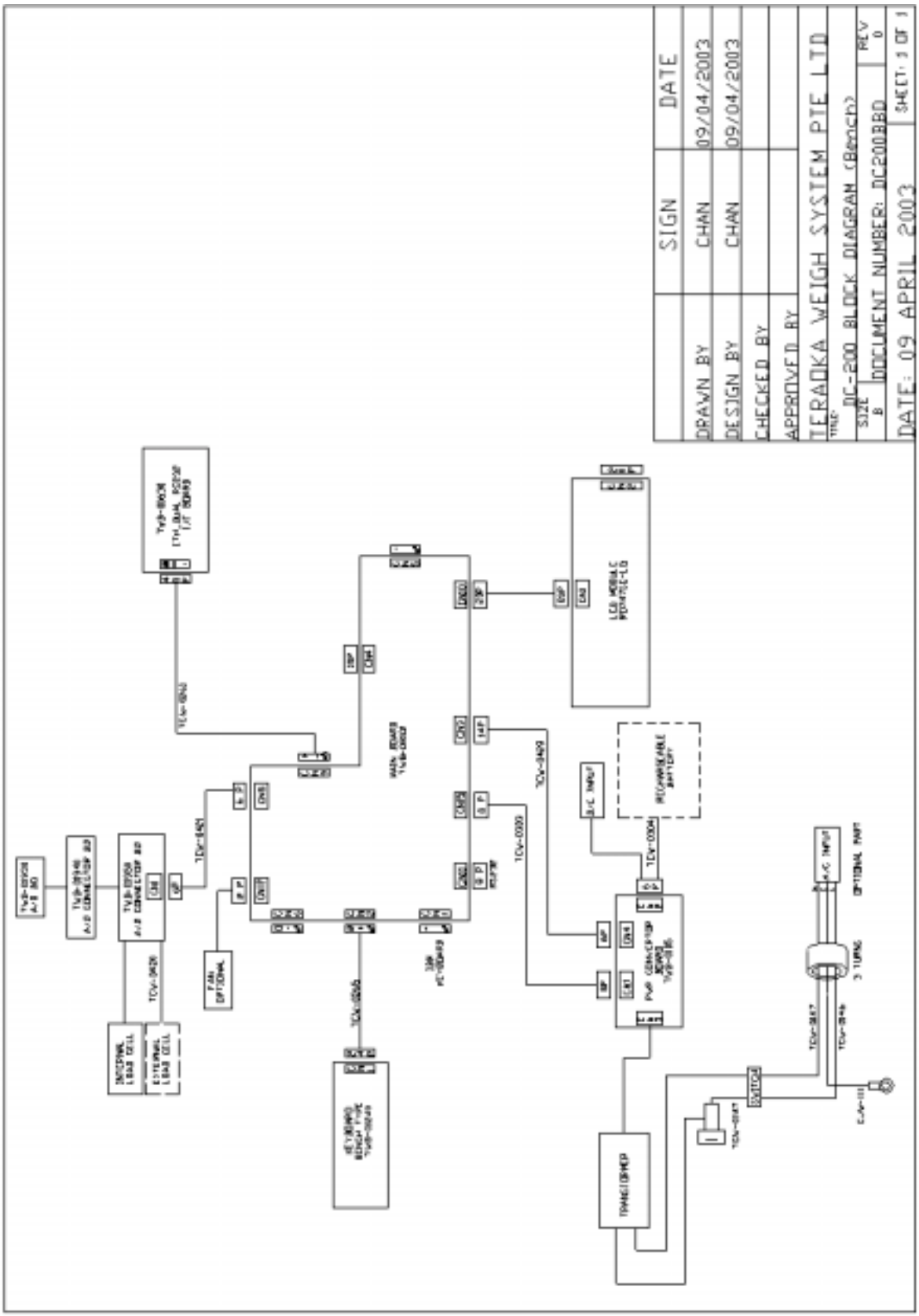


Figure 3-11. DC-200 Block Diagram

4.0 Assembly/Disassembly of the DC-200/300

The following instructions show the procedures for disassembling various parts of the scale to replace the display board, keyboard circuit board, interface main board, printer drawer block, and internal printer thermal head.

4.1 Removing the Main Cover

1. First, remove the stainless steel weighing platter from on top of the spider.

Figure 4-1. Disassembly - Remove Platter

2. Next unscrew the four screws that hold the platter support, and remove the platter support.

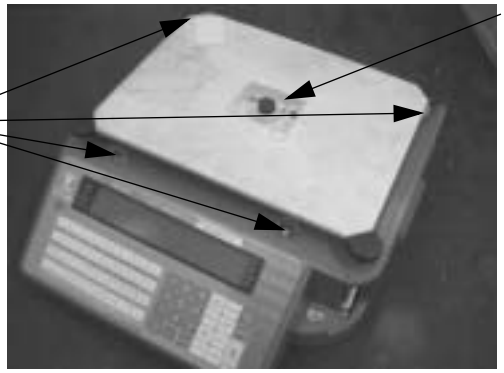


Figure 4-2. Remove Platter Support and Case Screws

   Also unscrew the screws at the four corners and the two screws underneath the front of the display panel.

3. Pull the main cover gently up, but not all the way off of the scale. Reach in and unplug the keyboard connector from the main board as well as the connectors from the display to the cover. Then you can lift the cover all the way off the scale and set it aside.

Figure 4-3. Main Cover Removed

4.2 Disconnecting the Display Board

The display board is inside the main scale cover. Before following the steps listed below, you have to remove the main cover assembly as described in Section 4.1.

1. Remove the screws circled in Figure 4-4 which hold the display assembly in place.

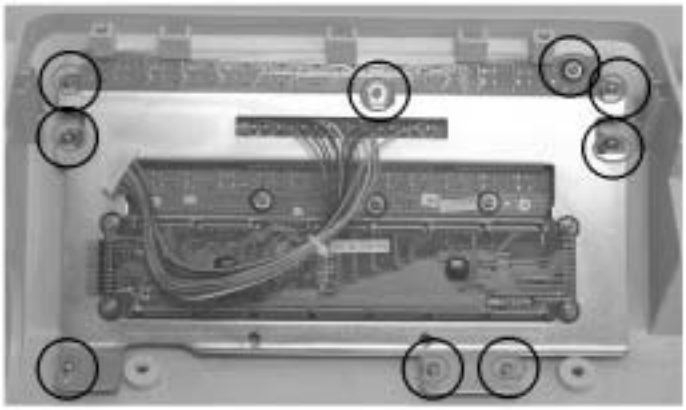


Figure 4-4. Display Assembly Screws

2. After removing the display assembly from the main cover, remove the four screws shown below to separate the display board from the rest of the display assembly.

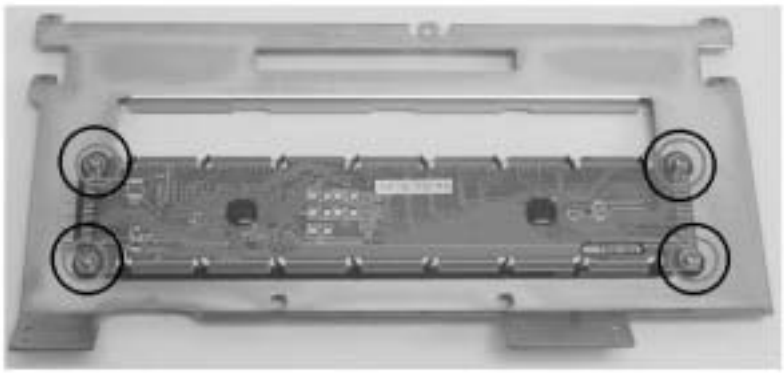


Figure 4-5. Display Board Screw Location

3. Gently separate the display board from the rest of the display assembly.

Figure 4-6. Display Board Back View and Display Board Front View

Figure 4-7. Display Board Front View

4.3 Disconnecting the Keyboard Circuit Board

In order to disconnect the Keyboard Circuit Board, you must first have removed the scale's Main Cover (see Section 4.1) and removed the Display Board Assembly (see Section 4.2 above).

1. Unscrew the six screws holding the keyboard circuit board to the scale cover.

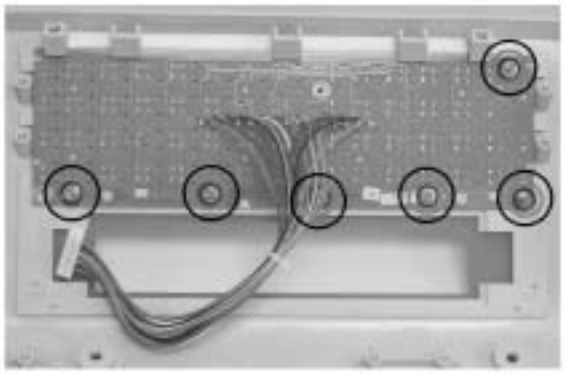


Figure 4-8. Keyboard Circuit Board Screw Location

2. Gently remove the keyboard circuit board from the cover.

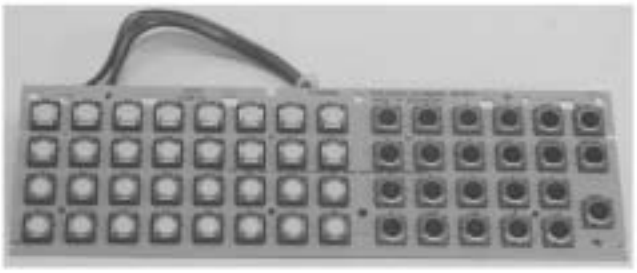


Figure 4-9. Keyboard Circuit Board Front View

4.4 Removing the Interface Main Board

In order to carry out this procedure, you must first have removed the scale's Main Cover as described in Section 4.1.

1. Unscrew the three screws shown in Figure 4-10 which allow you to remove the housing covering the interface ports.

Figure 4-10. Remove Interface Port Cover

2. Disconnect the Interface Main Board from the scale's main board attached to the base.

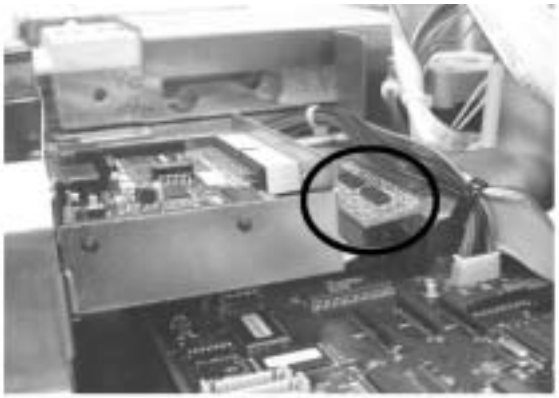


Figure 4-11. Separate the Interface Main Board from the Main Board

3. Gently remove the interface main board.

Figure 4-12. Removing the Interface Main Board

4.5 Removing the Printer Drawer Block (DC-300 only)

1. Disconnect the connector from the printer to the Main Board, as shown below.

Figure 4-13. Disconnect Printer From Main Board

2. To remove the drawer block, simultaneously push the two triggers on the printer drawer block tray.

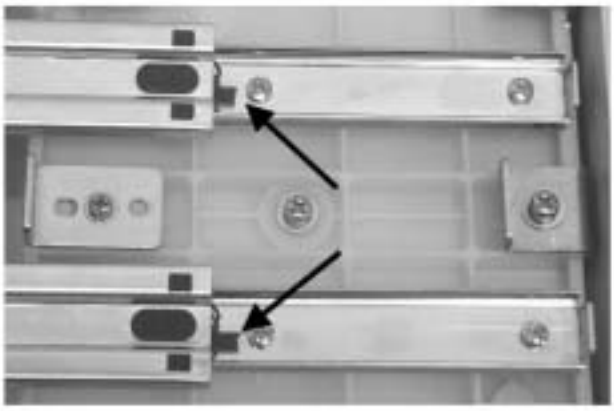


Figure 4-14. Printer Drawer Block Tray Triggers

The printer block, when removed, looks as follows:

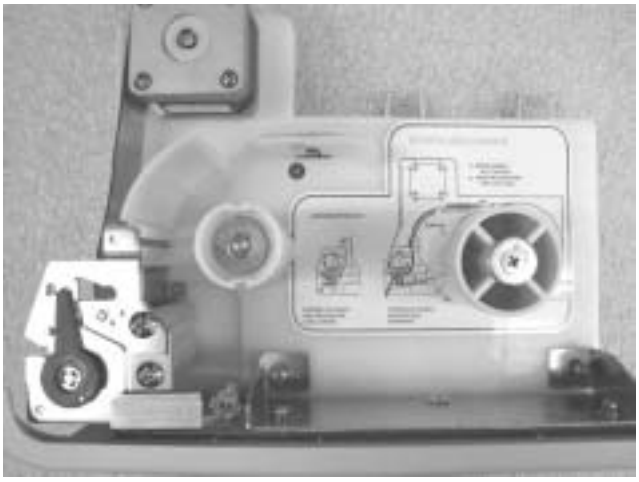


Figure 4-15. Printer Drawer Block Removed

4.6 Removing the Thermal Print Head (DC-300 only)

1. Open the printer drawer block.
2. Remove the screw holding the print head assembly in place.

Figure 4-16. Printer Head Assembly Screw

3. Turn the metal plate counter-clockwise. Then move the paper lead roller out of the way.
4. Disconnect the two cables going to the printer head.

Figure 4-17. Disconnect Printer Cables

5. Remove the two Allen screws holding the thermal print head in the printer head assembly.

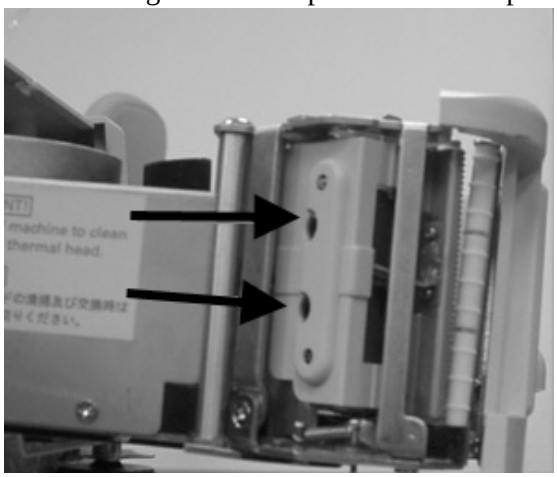


Figure 4-18. Printer Head Allen Screw Location

6. Pull the thermal print head out vertically from the print head assembly.

Figure 4-19. Removing the Thermal Print Head

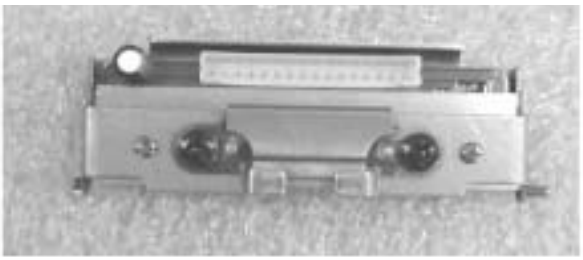


Figure 4-20. Thermal Print Head

5.0 Network and Interfaces: External Printers

5.1 Connecting an External Printer to the Scale

5.1.1 Spec Settings for External Printers

In order for the DC-200/300 scale to recognize an external printer properly and send data to it, there are customer specifications which must be set properly. The settings depend on which of the RS-232C ports you are connecting the printer to: the "main" RS-232C port or one of the "option ports" SIO1 or SIO2.

If the printer is connected to the main port (next to the keyboard port), the settings should be as follows:

Note: *For instructions on how to set the customer specifications, please see Section 2.9.*

- SPEC 15: SIO SELECT JOB to *3: PRINTER*
- SPEC 16: BAUD RATES (SIO) to the proper baud rate for your application
- SPEC 17: DATA LENGTH (SIO) to the proper length for your application
- SPEC 18: PARITY BIT (SIO) to the proper setting for your application
- SPEC 19: STOP BIT (SIO) to the proper setting for your application
- SPEC 32: TYPE OF PRINTER to the type of external printer you are using

If the printer is connected to one of the option ports, the spec settings depend upon what else you have connected to the other port. These two RS-232C ports are set in tandem using SPEC 20: RS232 OPTION CARD. Possible combinations include the following:

Note: *For instructions on how to set the customer specifications, please see Section 2.9.*

If connecting to...	Set specs as follows...
a force balance on SIO1 an external printer on SIO2	SPEC 20: RS232 OPTION CARD to "1: PRN (DIN2) - FB (DIN1) SPEC 21: BAUD RATE (DIN1) to the appropriate baud rate for the force balance SPEC 22: DATA LENGTH (DIN1) to the appropriate number of bits for the force balance SPEC 23: STOP BIT (DIN1) to the appropriate number of bits for the force balance SPEC 24: PARITY BIT (DIN 1) to the appropriate odd or even for the force balance SPEC 25: BAUD RATE (DIN2) to the appropriate baud rate for the printer SPEC 26: DATA LENGTH (DIN2) to the appropriate number of bits for the printer SPEC 27: STOP BIT (DIN2) to the appropriate number of bits for the printer SPEC 28: PARITY BIT (DIN 1) to the appropriate odd or even for the printer SPEC 29: RS232C CONNECT FB to "1: ENABLE" SPEC 30: TYPE OF FORCE BAL to "0: EXPORT" SPEC 32: TYPE OF PRINTER to the appropriate setting for the printer you are connecting
an external printer on SIO1 a force balance on SIO2	SPEC 20: RS232 OPTION CARD to "2: FB (DIN2) - PRN (DIN1) SPEC 21: BAUD RATE (DIN1) to the appropriate baud rate for the printer SPEC 22: DATA LENGTH (DIN1) to the appropriate number of bits for the printer SPEC 23: STOP BIT (DIN1) to the appropriate number of bits for the printer SPEC 24: PARITY BIT (DIN 1) to the appropriate odd or even for the printer SPEC 25: BAUD RATE (DIN2) to the appropriate baud rate for the force balance SPEC 26: DATA LENGTH (DIN2) to the appropriate number of bits for the force balance SPEC 27: STOP BIT (DIN2) to the appropriate number of bits for the force balance SPEC 28: PARITY BIT (DIN 1) to the appropriate odd or even for the force balance SPEC 29: RS232C CONNECT FB to "1: ENABLE" SPEC 30: TYPE OF FORCE BAL to "0: EXPORT" SPEC 32: TYPE OF PRINTER to the appropriate setting for the printer you are connecting

If connecting to...	Set specs as follows...
a PC on SIO1 an external printer on SIO2	SPEC 20: RS232 OPTION CARD to “3: PRN (DIN2) - PC (DIN1) SPEC 21: BAUD RATE (DIN1) to the appropriate baud rate for the PC SPEC 22: DATA LENGTH (DIN1) to the appropriate number of bits for the PC SPEC 23: STOP BIT (DIN1) to the appropriate number of bits for the PC SPEC 24: PARITY BIT (DIN 1) to the appropriate odd or even for the PC SPEC 25: BAUD RATE (DIN2) to the appropriate baud rate for the printer SPEC 26: DATA LENGTH (DIN2) to the appropriate number of bits for the printer SPEC 27: STOP BIT (DIN2) to the appropriate number of bits for the printer SPEC 28: PARITY BIT (DIN 1) to the appropriate odd or even for the printer SPEC 32: TYPE OF PRINTER to the appropriate setting for the printer you are connecting
an external printer on SIO1 a PC on SIO2	SPEC 20: RS232 OPTION CARD to “4: PC (DIN2) - PRN (DIN1) SPEC 21: BAUD RATE (DIN1) to the appropriate baud rate for the printer SPEC 22: DATA LENGTH (DIN1) to the appropriate number of bits for the printer SPEC 23: STOP BIT (DIN1) to the appropriate number of bits for the printer SPEC 24: PARITY BIT (DIN 1) to the appropriate odd or even for the printer SPEC 25: BAUD RATE (DIN2) to the appropriate baud rate for the PC SPEC 26: DATA LENGTH (DIN2) to the appropriate number of bits for the PC SPEC 27: STOP BIT (DIN2) to the appropriate number of bits for the PC SPEC 28: PARITY BIT (DIN 1) to the appropriate odd or even for the PC SPEC 32: TYPE OF PRINTER to the appropriate setting for the printer you are connecting

Table 5-1. Spec Settings for RS232C Ports SIO1 and SIO2

5.1.2 Connecting the Printer to the RS-232C Port

The DC-200/300 can be connected to an external printer using one of the RS-232C ports on the scale, either the main port next to the keyboard port or one of the option ports next to the Ethernet port (SIO1 and SIO2).

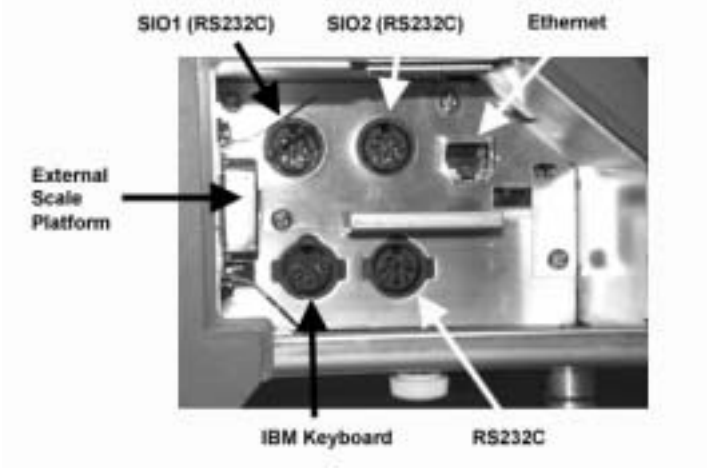


Figure 5-1. DC-200/300 Interface Ports

The DC-200/300 can be connected to an external printer using one of the RS-232C ports on the scale.

Figure 5-2. Connection from Scale to Printer

Pin Number	Description
1	
2	RXD
3	TXD
4	
5	GND
6	
7	RTS
8	CTS
9	

Table 5-2. Nine-Pin DIN Connector- External Printer

Pin Number	Description
1	
2	GND
3	
4	RXD
5	TXD
6	CTS
7	RTS
8	

Table 5-3. Eight-Pin DIN Connector - DC-200/300

5.2 Eltron Printers

The instructions below will walk you through how to design a label using the Create-A-Label software that comes with the Eltron printers using the DIGI template, download the template you have designed to the printer and connect the printer to the DC-200/300. These instructions refer to version 3.04 of the Eltron Create-A-Label software.

5.2.1 Set the Computer Serial Port

1. In Windows, click on the Start button.
2. Go up to the Settings menu and select *Control Panel*.
3. Double-click on the System icon.
4. Select the tab for Device Manager.
5. Double-click on Ports (COM & LPT)
6. Double-click on Communications Port (COM 1)
7. Click on the Port Settings tab and set the following parameters:
   - Bits per second: 9600
   - Data bits: 8
   - Parity: None
   - Stop bits: 1
   - Flow control: Hardware
8. Close the Communications Port (COM 1), Properties, and Device Manager dialog boxes by clicking on the OK buttons.

5.2.2 Designing a Label

1. Install the Create-A-Label software from Eltron on your computer and open the program.
2. Open the template file supplied by DIGI (Digi DC300- Eltron template.lbl). Resize the template for the size label you would like to design.

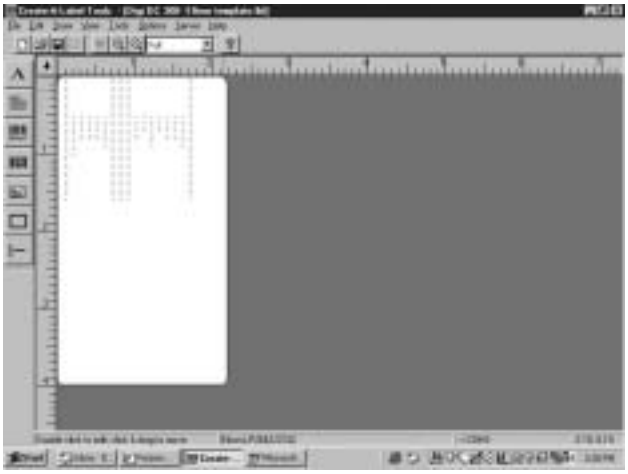


Figure 5-3. Hidden Fields on the Eltron Template

3. Open the Edit Menu and select Label Setup. You will see that the DIGI template includes 17 hidden fields which appear in red in the template.

Caution *Do not alter the hidden fields while designing your label. Changing or deleting the hidden fields will cause the label to print incorrectly or not at all.*

V#	Variable Name	DIGI Header
V00	ID Code (32 Characters)	3
V01	Quantity	2
V02	Gross Weight	A
V03	Net Weight	0
V04	Tare Weight	4
V05	Sequence No.	none
V06	Date and Time	none
V07	Alternate Part No. (32 Characters)	M
V08	Part Name (32 Characters)	N
V09	Weight per 1000 pieces	1
V10	Number of Transactions	none
V11	Quantity in Accumulation	I
V12	Lb, Kg, or g	none
V13	Weight per 1000 pieces	1
V14	Tare Weight	4
V15	Pieces in Inventory	K
V16	Lot Number (32 Characters)	E

Table 5-4. Hidden Fields for the Eltron Label Program

Note: *There are two tare weight fields (V04 and V14) and two weight/1000 pieces fields (V09 and V13). Either one can be used to include a barcode or human readable field on your label.*

4. To add items to your design, select the Draw menu and choose either text, bar code, line or box.
    - Line or Box - you can use the drawing tools to put separator lines or boxes around elements on the label.
    - Text - text can either be fixed or linked.
    - Fixed text is not linked to the data output from the scale. This can be used for titles, addresses and other information where whatever you enter is what you want to appear on the label.
    - Linked text fields will print the data output from the scale for that field.
    - Barcodes- barcodes are always linked to data from the scale output.
    - Pictures - pictures such as logos can be imported in PCX format and resized on the label screen.

Adding a Text Field

1. Select the Draw Menu and choose Text.
2. Set the font weight, height and width expansion, and rotation characteristics of the text field you want to appear on your label.
3. To add fixed text to the label (text such as titles or addresses not linked to the data output from the scale, select fixed from the drop-down list box labeled data source. Then in the text string box enter the fixed text you want to appear on the label. To link the text field to output from the DC-200/300 scale, select linked in the data source box, then select the field to link to from the linked fields drop-down list box.

Adding a Barcode Field

1. Select the Draw Menu and choose Barcode.
2. Set the Bar Code symbology in bar code type. Here you can also set whether or not you want a human-readable (numeric) representation of the barcode to appear underneath it.
3. Next, set the rotation, bar-width ratio, and multiplier, of the new field.
4. Bar codes will usually be linked to output from the DC-200/300 scale so select linked in the data source drop-down list. Then, in the linked fields parameter you can select the field from the scale output to link to from its drop-down list. (Table 5-4 for the fields you can link to).

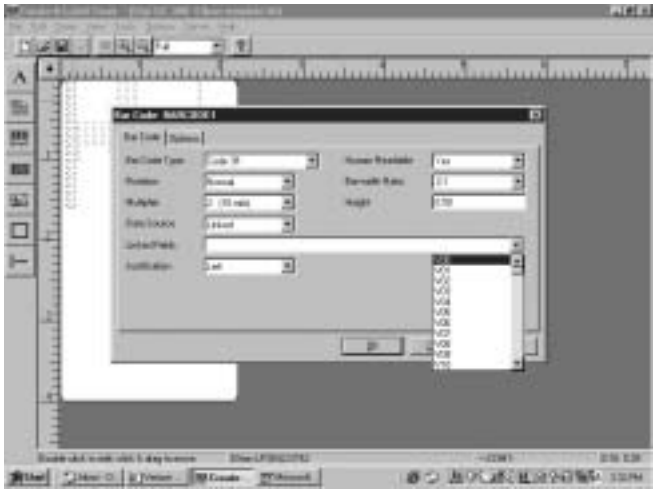


Figure 5-4. Choosing Fields to Link

You can also choose to insert the DIGI Header Code, if you choose to, by putting the header code in quotes before the linked field. Adding the header code here will cause the header code to be added to the barcode on the label. You can use the DIGI header codes (Ex. “3”V00 for ID Code) or header codes specified by other organizations such us AIAG. (See Table 5-4 on page 60 for the DIGI Header Codes corresponding to each linkable field.)

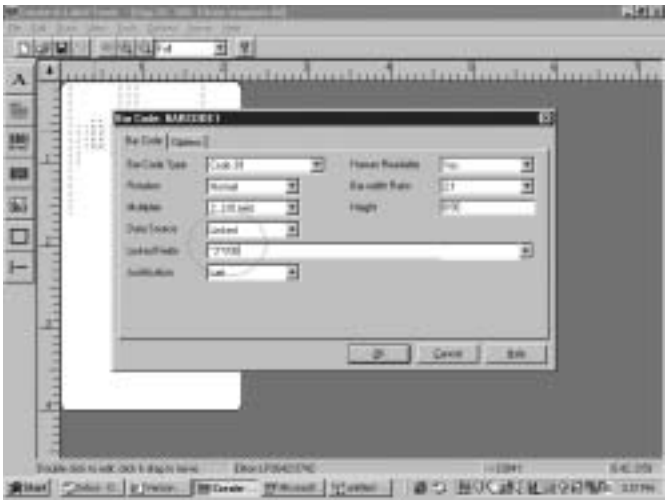


Figure 5-5. Entering Header Codes

You can also add a barcode not linked to output from the scale by choosing fixed in the data source drop-down list.

5. Since some of the default field lengths are 32 characters long, the bar codes may be correspondingly lengthy and require a long label. If you don’t need the full number of default characters, you can left click once on a hidden field that is a bar code. Then right-click on the field and select edit.

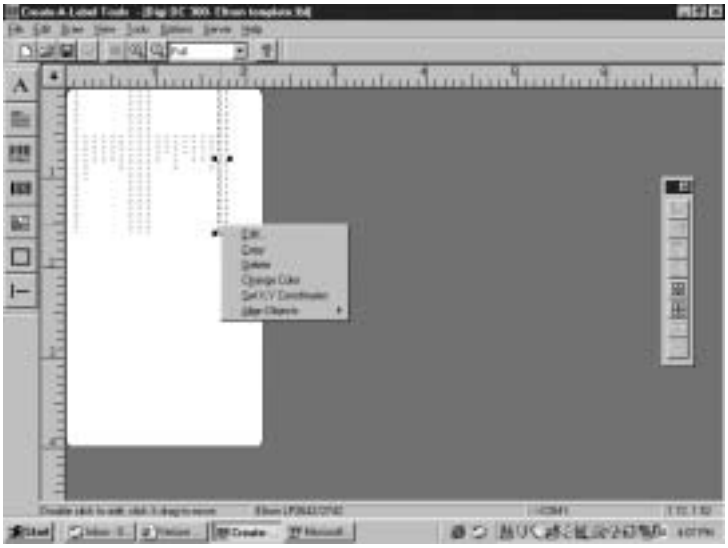


Figure 5-6. Editing Field Lengths

A dialog box will open which includes a string length you can edit. Reducing the field size will decrease the length of the bar code.

Figure 5-7. Reducing String Lengths

Caution *DO NOT change the default field size for the bar codes for Tare, Net Weight, or Unit Weight. Doing so may cause them to be unreadable when scanning them into the scale.*

6. You can place the new bar code field over top of the hidden fields on the label template. However, when editing or changing any of your new fields, be sure not to select a hidden field. Deleting or changing the hidden fields will cause the label to print incorrectly or not at all.

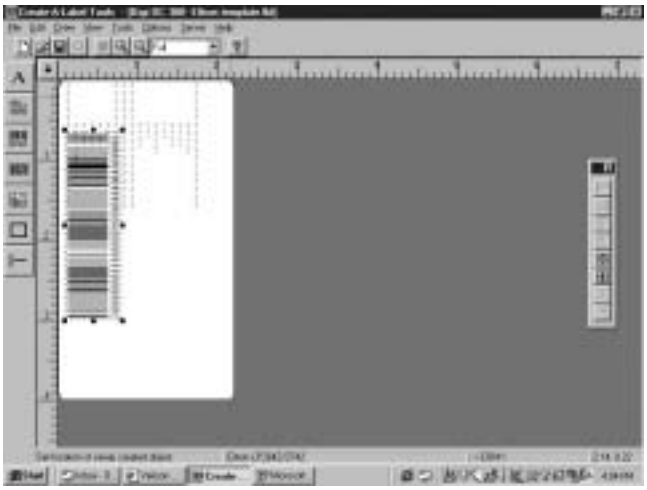


Figure 5-8. Placing Items Over the Top of the Hidden Fields

Adding a Picture or a Graphic

You may want to add a company logo or other picture to your label design. To do so, follow these steps:

1. Save the graphic or picture in the .PCX format (Microsoft Paintbrush) and copy or move the file into the "PCX" folder of the Create-A-Label directory. If you chose the default directory when you installed the software it will be at C:\CAL3.304\PCX.
2. Select the Draw Menu and choose Picture.
3. In the Pictures dialog box, set the rotation, and ratio for the graphic and picture. Set the data source to fixed.
4. In the pictures field, use the drop-down list box to select the graphic or picture you want on the label.

If you have clicked on the preview check box, the graphic or picture will appear in the preview pane.

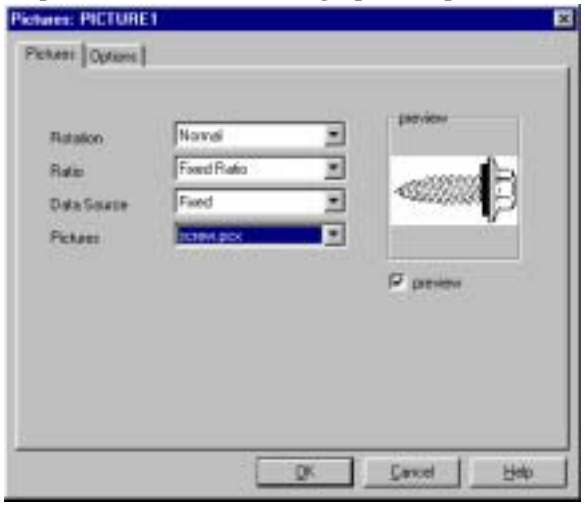


Figure 5-9. Inserting a Picture or a Graphic

5. After you click the OK button in the Pictures dialog box you will be returned to the main label design screen. The cursor will change to be a box the size of the graphic or picture you are inserting on the label. Move the box to the place on the label that you want it to appear and click to place it there. You can click on and drag the graphic to another position on the label and you continue to work on your design. Resizing it can be accomplished by dragging on the handles around the graphic.
6. Downloading a graphic to the Eltron printer requires an extra step (see Section 5.2.3, Step 2).

5.2.3 Saving the Label Format You Have Made

1. When you have completed the label design, open the File Menu and choose the Save As option. You will want to rename the file to a name different from the default, both so that you don't overwrite the basic DIGI template and so that you can distinguish it from other designs you may format. After you have renamed the label design, click on the Save button.
2. If your label format does not have any pictures or graphics, you can skip to Step 3 of this section. If your label design contains a picture or graphic, open the File Menu and select Download to Printer. In the dialog box, select the file name for the label you want to download. Click on the Download button to send the file to the Eltron printer.

Note: *This procedure downloads the picture or graphic to the printer. To download the text and barcode fields to the printer in a form that will work with the DC-200/300 counting scale, you need to follow Steps 3-10 below.*

3. After the label is saved under a new file name, open the File Menu again and select Generate EPL Source File. A Print To dialog box will appear showing your label file name with a .BIN extension. Click the OK button. Next another dialog box will appear showing your label file name with an .EJF extension. Click the OK button.

Note: *The .BIN and .EJF filenames can only be 8 characters long, excluding the .BIN or .EJF extensions.*

4. Close the Create-A-Label application.
5. Open the Start Menu, select Programs, then select Accessories. Under Accessories, select either the Wordpad or Notepad applications.
6. In Wordpad or Notepad, open the .EJF file you created in Step 2 above.

7. Change the “O” in the first line to an “N”.

Figure 5-10. Editing the .EJF File

8. In the second and third lines, if the name is too long for the program to recognize, it will truncate the name, putting a x in it. If you have names with an x in them in the second or third lines, rename them using 8 characters or less.
9. For each line from V00 to V16, change the justification from L to N. Example: change V00, 32, L, “” to V00, 32, N,””. You can edit the lines manually or, if you are familiar with the function, use the Replace function under the Edit Menu in WordPad.
10. At the end of the .EJF file, insert a line before the last line FE and enter PA1. This tells the printer to print one label.
11. Save the .EJF file you have edited by opening the File Menu and clicking on Save or by clicking on the disc icon on the toolbar. Keep the same file name you have already given this label format.
12. Close the WordPad application.

Below is a sample label and the corresponding .EJF file after it has been edited in Wordpad or Notepad.

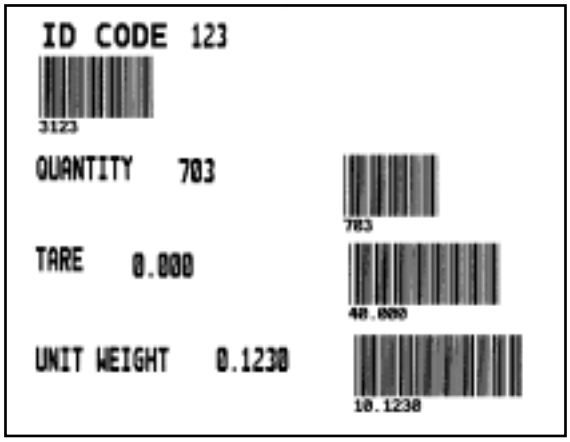


Figure 5-11. Sample Label Format From .EJF File Downloading the Label Format from the Computer to the Eltron Printer

```
N
FK”DIGIDC2"
FS”DIGIDC2"
V00, 32, N, ""
V01, 10, N, ""
V02, 6, N, ""
V03, 6, N, ""
V04, 6, N, ""
V05, 8, N, ""
V06, 32, N, ""
V07, 32, N, ""
V08, 32, N, ""
V09, 6, N, ""
V10, 4, N, ""
V11, 8, N, ""
V12, 4, N, ""
V13, 6, N, ""
V14, 6, N, ""
V15, 8, N, ""
V16, 32, N, ""
q816
Q1015, 24+0
S2
D8
ZT
TTh:m
TDy2.mn.dd
A39, 946, 3, 1, 4, 3, N, "ID CODE"
A39, 700, 3, 1, 4, 2, N, V00
B93, 950, 3, 3, 2, 4, 101, B, "3"V00
A256, 954, 3, 1, 4, 2, N, "QUANTITY"
A260, 721, 3, 1, 4, 2, N, V01
B254, 451, 3, 3, 2, 4, 101, B, V01
A404, 956, 3, 1, 4, 2, N, "TARE"
A414, 796, E, 1, 4, 2, N, V04
B398, 443, 3, 3, 2, 4, 101, B, "4"V04
A568, 956, 3, 1, 4, 2, N, "UNIT WEIGHT"
A568, 619, 3, 1, 4, 2, N, V12
B548, 436, 3, 3, 2, 4, 101, B, "1"V13
PA1
FE
```

Figure 5-12. Sample .EJF File in WordPad After Editing

5.2.4 Downloading the Label Format From the Computer to the Eltron Printer

1. Install the Eltrterm.exe download program supplied by DIGI and open it.
2. In the Eltrterm program open the CommPort Menu and select Properties.
3. In the CommPort Properties dialog box, set the serial protocol as follows:
   - Port: Com1
   - Printer: LP2742 (or other model as appropriate)
   - Maximum Speed: 9600
   - Echo: Off
   - Data Bits: 8
   - Parity: None
   - Stop Bits: 1
   - Flow Control: RTS

   Once the serial protocol properties have been set, click on the OK button to save the changes.
4. Open the File Menu and select Open File to Send.
5. In the Open Communications Log File dialog box, select the directory path and .EJF file you previously made in the Eltron Create-A-Label software. Then click on the Open button.
6. Use the pull-down menu on the Enter Download Label Name field to select the type of download you want to send to the printer:
   - Individual Label - the most commonly used. This will print a single label according to what you specified in Create-A-Label.
   - Total Label - this will print a label when totaling accumulations.
   - NO ID Individual Label * + - will print an individual label without an ID Code when you press the *, + or - key (depending on how you have the DC-200/300 specs set.
   - NO ID Total Label - same as Total Label but with no ID Code.
   - NO WT Item Label - prints a label without weight data.
   - NO ID NO WT Item Label - prints an Item label without ID Code or weight data.

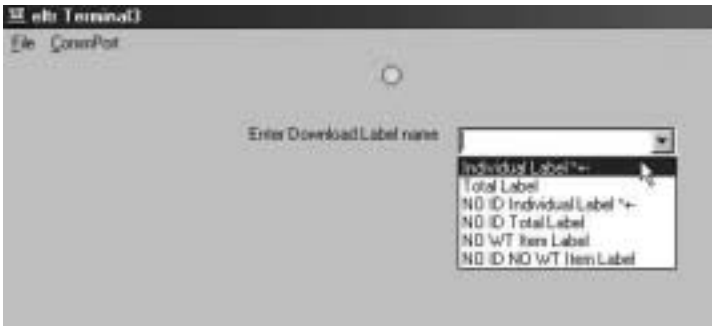


Figure 5-13. Selecting Type of Download

7. Once you have selected the type of download, the label format will download to the printer.
8. Open the File Menu and select Exit to close the download program.

5.2.5 Predesigned Label Formats for Eltron Printers

In order to make it easier for you, DIGI can supply you with four basic label format templates for the Eltron printers. These formats cover the most-used and requested fields and designs. You can also customize and reuse these templates using the instructions in Section 5.2.2.

Label Format L1- Individual Label with ID Code

This template will print a single label with an Item ID Code when the *, + or - key is pressed on the DC-200/300 scale. It would be used when you are weighing and counting an item which has previously been entered into the DC-200/300's item database.

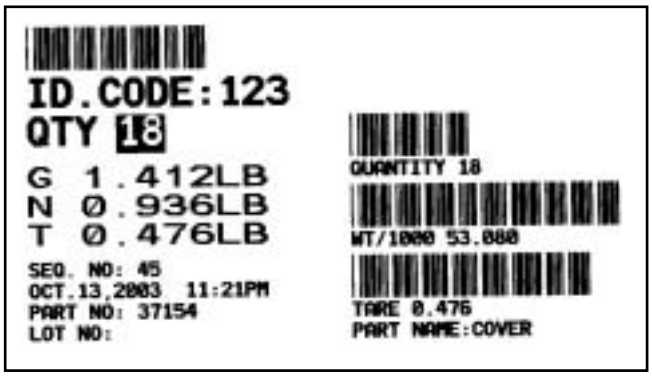


Figure 5-14. Eltron Label Template 1 Sample

The contents of the .EJF file for Eltron Label Format 1 are:

```
N
FK"L1"
FS"L1"
V00,32,N,"0"
V01,10,N,"1"
V02,10,N,"2"
V03,10,N,"3"
V04,10,N,"4"
V05,10,N,"5"
V06,30,N,"6"
V07,32,N,"7"
V08,32,N,"8"
V09,10,N,"9"
V10,10,N,"A"
V11,10,N,"B"
V12,10,N,"C"
V13,10,N,"D"
V14,10,N,"E"
V15,10,N,"F"
V16,32,N,"G"
Q808,0
R8,16
S2
D10
ZT
A118,0,1,4,1,1,N,"SEQ. NO: "V05
A90,0,1,4,1,1,N,V06
B430,0,1,3,2,7,57,N,"3"V00
A362,0,1,4,2,2,N,"ID.CODE:"V00
A62,0,1,4,1,1,N,"PART NO: "V07
A34,0,1,4,1,1,N,"LOT NO: "V16
A34,430,1,4,1,1,N,"PART NAME:"V08
A311,0,1,4,2,2,N,"QTY "
A311,120,1,4,2,2,R,V01
B311,430,1,3,2,7,57,N,V01
A248,430,1,4,1,1,N,"QUANTITY "V01
A244,0,1,2,2,3,N,"G "V02V12
A206,0,1,2,2,3,N,"N "V03V12
A168,0,1,2,2,3,N,"T "V04V12
B218,430,1,3,2,7,57,N,"1"V13
A155,430,1,4,1,1,N,"WT/1000 "V09
B125,430,1,3,2,7,57,N,"4"V14
A62,430,1,4,1,1,N,"TARE "V04
PA1
FE
```

Table 5-5. Sample .EJF File in WordPad After Editing

Label Format L2 - Individual Label Without an ID Code

This template will print a single label without an Item ID Code when the *, + or - key is pressed on the DC-200/300 scale. It would be used in cases where you want an Item Label for an item you are weighing and counting that is not in the DC-200/300's item database.

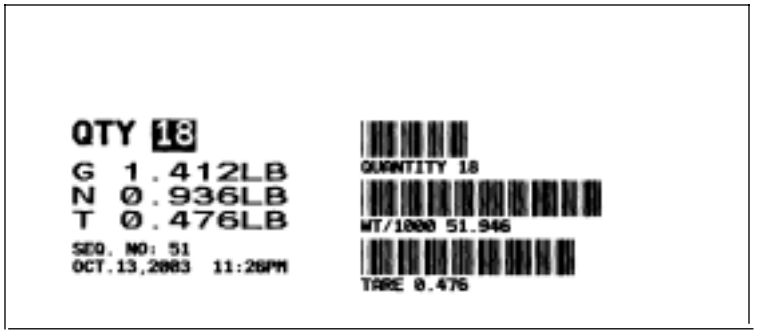


Figure 5-15. Eltron Label Template 2 Sample

The contents of the .EJF file for Eltron Label Format 2 are:

N	Q808,0
FK"L2"	R8,16
FS"L2"	S2
V00,32,N,"0"	D10
V01,10,N,"1"	ZT
V02,10,N,"2"	A118,0,1,4,1,1,N,"SEQ. NO: "V05
V03,10,N,"3"	A90,0,1,4,1,1,N,V06
V04,10,N,"4"	A311,0,1,4,2,2,N,"QTY "
V05,10,N,"5"	A311,120,1,4,2,2,R,V01
V06,30,N,"6"	B311,430,1,3,2,7,57,N,V01
V07,32,N,"7"	A248,430,1,4,1,1,N,"QUANTITY "V01
V08,32,N,"8"	A244,0,1,2,2,3,N,"G "V02V12
V09,10,N,"9"	A206,0,1,2,2,3,N,"N "V03V12
V10,10,N,"A"	A168,0,1,2,2,3,N,"T "V04V12
V11,10,N,"B"	B218,430,1,3,2,7,57,N,"1"V13
V12,10,N,"C"	A155,430,1,4,1,1,N,"WT/1000 "V09
V13,10,N,"D"	B125,430,1,3,2,7,57,N,"4"V14
V14,10,N,"E"	A62,430,1,4,1,1,N,"TARE "V04
V15,10,N,"F"	PA1
V16,32,N,"G"	FE
(continued at the top of the next column)	

Table 5-6. Sample Contents of .EJF File for Eltron Label Format 2

Label Format L3 - Total Label With an ID Code

This template will print a total label with an Item ID Code. It would be used when doing an accumulation on an item which has previously been entered into the DC-200/300's item database.

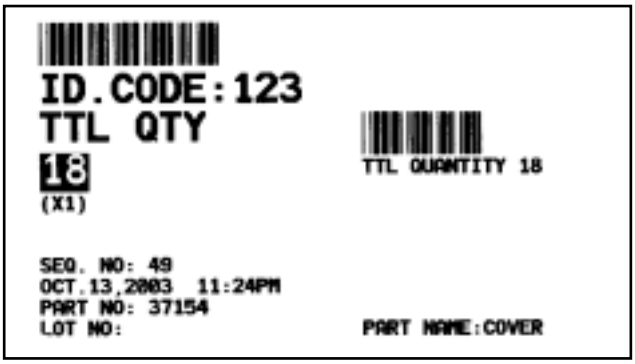


Figure 5-16. Eltron Label Template 3 Sample

The contents of the .EJF file for Eltron Label Format 3 are:

N	Q808,0
FK"L3"	R8,16
FS"L3"	S2
V00,32,N,"0"	D10
V01,10,N,"1"	ZT
V02,10,N,"2"	A118,0,1,4,1,1,N,"SEQ. NO: "V05
V03,10,N,"3"	A90,0,1,4,1,1,N,V06
V04,10,N,"4"	B430,0,1,3,2,7,57,N,"3"V00
V05,10,N,"5"	A362,0,1,4,2,2,N,"ID.CODE:"V00
V06,30,N,"6"	A62,0,1,4,1,1,N,"PART NO: "V07
V07,32,N,"7"	A34,0,1,4,1,1,N,"LOT NO: "V16
V08,32,N,"8"	A34,430,1,4,1,1,N,"PART NAME:"V08
V09,10,N,"9"	A311,0,1,4,2,2,N,"TTL QTY"
V10,10,N,"A"	A255,2,1,4,2,2,R,V11
V11,10,N,"B"	A200,0,1,4,1,1,N,"(X"V10")"
V12,10,N,"C"	B311,430,1,3,2,7,57,N,V11
V13,10,N,"D"	A248,430,1,4,1,1,N,"TTL QUANTITY "V11
V14,10,N,"E"	PA1
V15,10,N,"F"	FE
V16,32,N,"G"	
(continued at top of the next column)	

Table 5-7. Sample Contents of .EJF File for Eltron Label Format 3

Label Format L4 - Total Label Without an ID Code

This template will print a total label without an Item ID Code. It would be used when doing an accumulation on an item which has not previously been entered into the DC-200/300's item database.

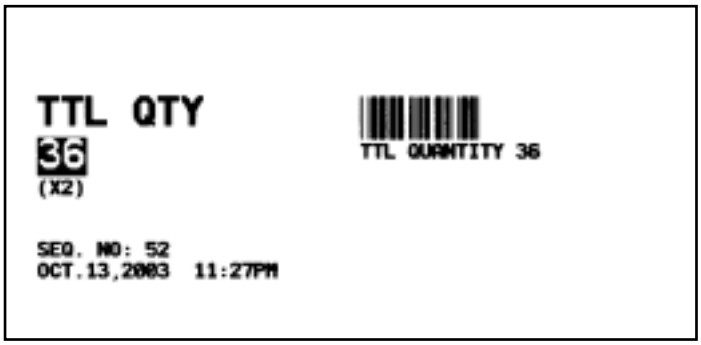


Figure 5-17. Eltron Label Template 4 Sample

The contents of the .EJF file for Eltron Label Format 4 are:

```
N
FK"L4"
FS"L4"
V00,32,N,"0"
V01,10,N,"1"
V02,10,N,"2"
V03,10,N,"3"
V04,10,N,"4"
V05,10,N,"5"
V06,30,N,"6"
V07,32,N,"7"
V08,32,N,"8"
V09,10,N,"9"
V10,10,N,"A"
V11,10,N,"B"
V12,10,N,"C"
V13,10,N,"D"
V14,10,N,"E"
V15,10,N,"F"
V16,32,N,"G"
Q808,0
R8,16
S2
D10
ZT
A118,0,1,4,1,1,N,"SEQ. NO: "V05
A90,0,1,4,1,1,N,V06
A311,0,1,4,2,2,N,"TTL QTY"
A255,2,1,4,2,2,R,V11
A200,0,1,4,1,1,N,"(X"V10")"
B311,430,1,3,2,7,57,N,V11
A248,430,1,4,1,1,N,"TTL QUANTITY "V11
PA1
FE
```

Table 5-8. Sample Contents for .EJF File for Eltron Label Format 4

5.2.6 Testing to See What Label Format or Graphic is in the Eltron Printer's Memory

1. On the Windows Taskbar, click on the Start Button.
2. From the Start Menu select *Programs* and then, from the programs menu select *Accessories*.
3. Within the Accessories menu select *Communications* and in the communications menu choose *HyperTerminal*.
4. In the Connection Description dialog box, type Eltron Test in the Names field. Click on the OK button.
5. In the Connect To dialog box, use the pull-down list box for Connect Using: to select Direct to COM1. Click on the OK button.
6. In the COM1 Properties dialog box, on the Port Settings tab, set the following:
   - set Bits per second: to 9600
   - set Data bits: to 8
   - set Parity: to None
   - set Stop Bits to 1
   - set Flow Control: to Hardware

   When you are done configuring the Port Settings, click on the OK button to exit the Port Settings dialog box.
7. Click on the File Menu and select Properties. In the Properties dialog box, select the tab labeled *Settings*.
8. In the Settings dialog box, choose *VT100* as the Emulation.

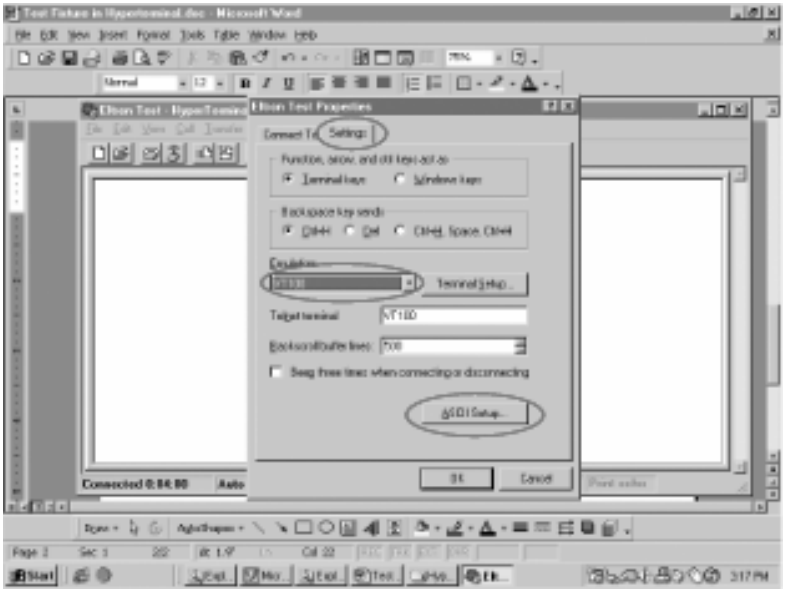


Figure 5-18. Emulation in Hyperterminal

9. In the Settings dialog box, click on the button labeled *ASCII Setup*. Then, in the ASCII Setup dialog box, click on the check boxes for *Send line ends with line feeds*, *Echo typed characters locally*, *Append line feeds to incoming line ends*, and *Wrap lines that exceed terminal width* check boxes to select them.

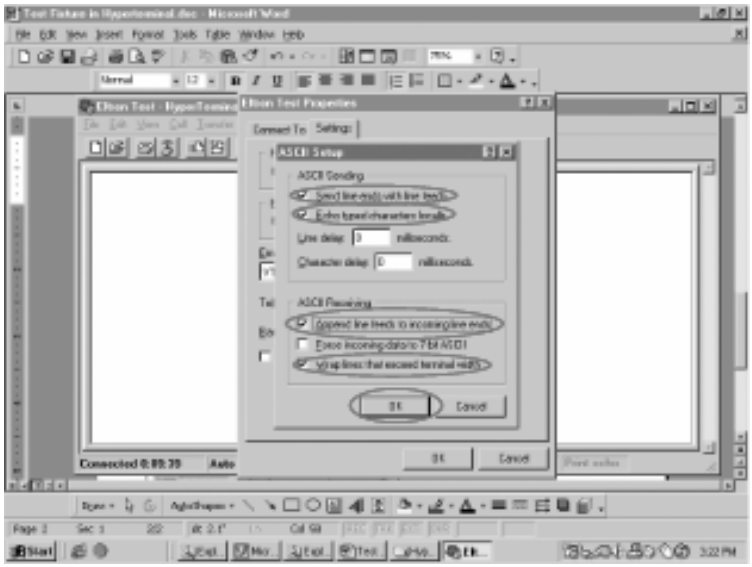


Figure 5-19. ASCII Setup in HyperTerminal

10. Click on the OK button to close the ASCII Setup dialog box, then click on the OK button to close the Properties dialog box. Hyperterminal is now ready for data transfer.
11. Press the Cap Locks key on your keyboard and type one of the following two commands in the terminal window:
    - Type *UG* to have the printer return what graphic is stored in the Eltron printer's memory.
    - Type *UF* to have the printer return what label format is stored in the printer.
12. The terminal window will now display the data returned by the printer.

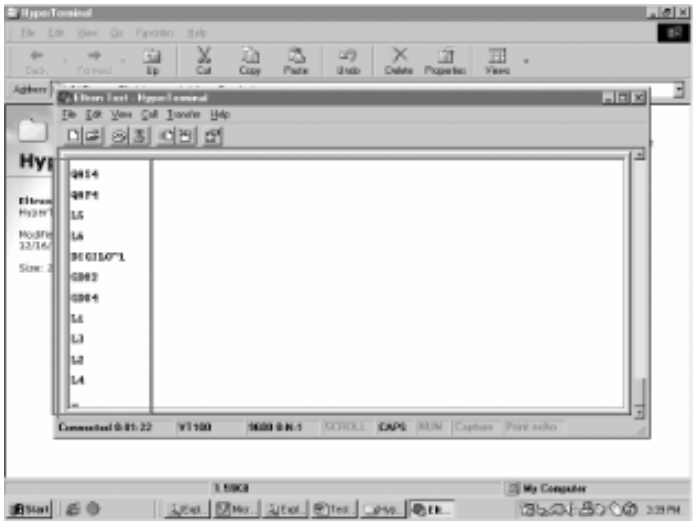


Figure 5-20. Printer Memory Displayed in HyperTerminal

13. When finished, select the File Menu and Exit to close HyperTerminal. The program will ask you whether you want to save the "Eltron Test" session or not. Click on the Yes button to save the settings for future use. The next time you open the HyperTerminal accessory, "Eltron Test" will be one of the connection choices.

5.2.7 Printing to the Eltron Printer from the DC-200/300 Scale

1. Make sure that the following DC-200/300 spec codes are properly set for printing to the Eltron printer (or a printer that emulates the Eltron) as an external printer.

Note: *For instructions on how to set the customer specifications, please see Section 2.9.*

- If you are using a label design format designed in Create-A-Label and downloaded to the Eltron printer from your PC (see Section 5.2.2), set SPEC62 - RS-232 - XON/XOFF to *0: Disable*. If you want to use the Item or Total label for Eltron printers pre-programmed into the DC-200/300, set SPEC62 - RS-232 - X0N/XOFF to *1: Enable*. This turns on or off the handshaking between the scale and printer that allows the label format in the DC-200/300 to be downloaded to the Eltron printer at the time you print.
- If the printer is connected to the DC-200/300's main RS-232 port, set SPEC15-SIO Select Job to *3: Printer*. Then check to make sure that SPEC16 - RS-232C Baud Rate, SPEC17 - RS-232C Data Length, SPEC18 - RS-232C Parity Bit, and SPEC19 - RS-232C Stop Bit are set to their default values of 9600 baud, 8 bit data length, parity - none, and 1 stop bit.
- If the printer is connected to one of the two RS-232 ports on the DC-200/300 option card, set SPEC20 to 3: Printer/PC if the printer is on DIN1 or 4: PC/Printer if the printer is on DIN2. Then check to see that Specs 21 through 24 (in the case where the printer is on DIN1) and Specs 25 through 28 (in the case where the printer is on DIN2) are set to their default values of 9600 baud, 8 bit data length, parity - none, and 1 stop bit.
- Set SPEC31 - PC/PRN Output Data Method to the conditions on which you want data to be sent to the printer.
- Set SPEC32 - Select External Printer Type to *0: Eltron LP2622/LP2722*.
- If you want to use a label format you previously downloaded to an Eltron printer from a PC using Create-A-Label and eltrterm.exe, set SPEC33 - External Eltron/TVP Printer Download Label Format to *1: Disable*. If you want one of the two label formats for Eltron printer programmed into the DC-200/300 to be sent from the scale to the printer when a print operation takes place, set SPEC33 - External Eltron/TVP Printer Download Label Format to *0: Enable*.
- Set SPEC34 - Print When Press +/- key to *0: Disable* or *1: Enable* depending on how you want that feature to work.

2. After making sure that the power is off on both the Eltron printer and the DC-200/300 scale, connect the cable from the scale to the printer.
3. Turn the scale and printer on again.
4. With the DC-200/300 in weighing mode, perform a weighing or counting operation and press the Reprint button on the scale to test print a label.

5.3 Epson Printers

The DC-200/300 also includes a pre-programmed format that works with Epson printers or printers that emulate Epson printers.

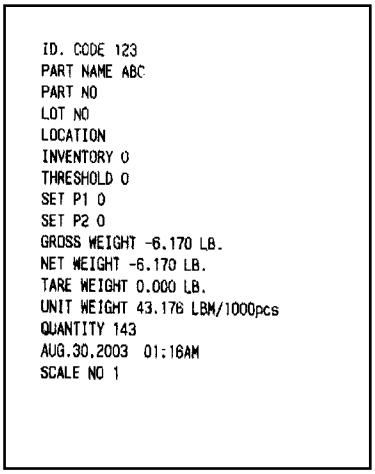


Figure 5-21. Epson Printer Label Format

1. Make sure that the following DC-200/300 spec codes are properly set for printing to the Epson printer as an external printer.

Note: *For instructions on how to set the customer specifications, please see Section 2.9.*

- If you want to use the label for Epson printers pre-programmed into the DC-200/300, set SPEC62 - RS-232 - X0N/XOFF to *1: Enable*. This turns on the handshaking between the scale and printer that allows the label format in the DC-200/300 to be downloaded to the Epson printer at the time you print.
- If the printer is connected to the DC-200/300's main RS-232 port, set SPEC15-SIO Select Job to *3: Printer*. Then check to make sure that SPEC16 - RS-232C Baud Rate, SPEC17 - RS-232C Data Length, SPEC18 - RS-232C Parity Bit, and SPEC19 - RS-232C Stop Bit are set to their default values of 9600 baud, 8 bit data length, parity - none, and 1 stop bit.
- If the printer is connected to one of the two RS-232 ports on the DC-200/300 option card, set SPEC20 to *3: Printer/PC* if the printer is on DIN1 or 4: PC/Printer if the printer is on DIN2. Then check to see that Specs 21 through 24 (in the case where the printer is on DIN1) and Specs 25 through 28 (in the case where the printer is on DIN2) are set to their default values of 9600 baud, 8 bit data length, parity - none, and 1 stop bit.
- Set SPEC31 - PC/PRN Output Data Method to the conditions on which you want data to be sent to the printer.
- Set SPEC32 - Select External Printer Type to *3: Epson*.
- Set SPEC33 - Download Label Format to *1: Disable*.
- Set SPEC34 - Print When Press +/- key to *0: Disable* or *1: Enable* depending on how you want that feature to work.

2. After making sure that the power is off on both the Epson printer and the DC-200/300 scale, connect the cable from the scale to the printer.
3. Turn the scale and printer on again.
4. With the DC-200/300 in weighing mode, perform a weighing or counting operation and press the Reprint button on the scale to test print a label.

6.0 Network and Interfaces: Connection to a PC

The DC-200/300 can be connected to an IBM-compatible personal computer either by using one of its RS-232 ports to connect to the computer's COM1 or COM2 port or by connecting its Ethernet port to a network card on the computer.

6.1 Ethernet Connection

If you use the scale's default IP Address of 192.168.0.1 for the DC-300, or 192.168.0.2 for the DC-200, then you do not need to use Section 6.1.2 - Machine Setup Utility or Section 6.1.3 - Changing the IP Address Directly on the Scale. Go directly to Section 6.1.5 - Setting the Computer's Network Communication.

If your computer network requires that the scale's IP Address be changed, use the steps below to change it by way of the Machine Setup Utility. Contact your Network Administrator if you need more information on how to integrate the DC-200/300 as a workstation on your network.

Note: *The instructions and screenshots below apply to computers running Microsoft Windows 98 as their operating system. Windows 2000 and Windows XP installation is similar although the options may not appear in precisely the same place. For help with Windows 2000 or Windows XP installations, see your Network Administrator or contact your DIGI dealer.*

6.1.1 Checking the Scale's IP Address

You can check to see what the DC-200/300's IP Address is set at by doing the following:

1. Press the MODE key three times. The scale will display *SERVICE MODE.* While holding down the REZERO key, enter *0416*. The display will show the Scale IP Address. Unless you have modified it as explained in Section 6.1.2 and Section 6.1.3, it should show the default address which is 192168000001.
2. To exit the IP Address display, press the TARE key. Then press the MODE key twice to return to the normal or weighing mode.

6.1.2 Machine Setup Utility

In most situations you will be able to simply use the DC-200/300's default IP Address of 192.168.00.1. The Machine Setup Utility is only necessary if you need to change the IP address of the scale to avoid conflicts on your network. If you are not sure whether the IP address needs to be changed, please talk to your Network Administrator.

The Machine Setup Utility installs automatically when you run the setup program for the DC-300 Utility program that appears in the Service Tools folder on the DC-300 Setup Tools CD-ROM you received with your scale. If you have not yet installed the DC-300 Utility programs.

1. On your computer, open the Machine Setup Utility program. If you used the defaults when you installed the program, it will appear under the DC-300 Utility group under Programs.

2. To change the IP Address of the DC-200/300, press the Edit button. Enter the new address in the IP Address field.

Figure 6-1. Machine Setup Utility

3. After entering the new address, press the SAVE button.

6.1.3 Changing the IP Address Directly on the Scale

To change the IP address of the DC-200/300 scale using the Machine Setup Utility program that is in the Service Tools Folder on your DC-300 Setup Tools CD-ROM, see Section 6.1.2. The scale's IP address can also be changed direcly on the scale itself.

In most situations you will be able to simply use the DC-300's default IP Address of 192.168.00.1. The Machine Setup Utility is only necessary if you need to change the IP address of the scale to avoid conflicts on your network. If you are not sure whether the IP address needs to be changed, please talk to your Network Administrator.

To change the IP address of the DC-200/300 directly from the keyboard of the scale, follow the instructions below:

1. Press the MODE key three times. The scale will display *SERVICE MODE*. While holding down the REZERO key, enter *0416*. The display will show the Scale IP Address. Unless you have modified it as explained in Section 6.1.2, it should show the default address which is 192168001000 for the DC-300 or 192168000002 for the DC-200.
2. To change the IP address, enter a new one from the numeric keypad. Note that the digits you enter will show up starting with the fourth character to the right. The last three digits represent the port number and are set by setting *SPEC 41 - PORT NUMBER (IP)*. See Section 2.9.1 for information on how to change the scale's SPEC settings.
3. To save the changes and exit the IP Address display, press the CODE key. To exit without saving your changes, press the TARE key. Then press the MODE key twice to return to the normal or weighing mode.

6.1.4 Ethernet Cable Connection Between the Scale and the Computer

If you are connecting the scale directly to an IBM-compatible PC, use a category 5 Ethernet crossover cable. (The cable MUST be a crossover cable, not a standard Ethernet cable.) Plug one end of the cable into the Ethernet port on the DC-200/300 scale and the other end into the network card on the computer. If you need help selecting the right cable or port on your computer, contact your Network Administrator or your DIGI dealer.

Pin	Signal
1	TX+
2	TX-
3	RX+
6	RX-
5, 7, 8	N.A.

Pin	Signal
1	RX+
2	RX-
3	TX+
6	TX-
5, 7, 8	N.A.

Table 6-1. Crossover Connection Pin Configuration

If you are connecting the scale to a network hub, use a regular or "straight" category 5 Ethernet cable. Plug one end of the cable into the Ethernet port on the DC-200/300 scale and the other end into an open port on the hub. If you need help selecting the right cable or checking the configuration of your hub, contact your Network Administrator.

Pin	Signal
1	TX+
2	TX-
3	RX+
6	RX-
5, 7, 8	N.A.

Pin	Signal
1	TX+
2	TX-
3	RX+
6	RX-
5, 7, 8	N.A.

Table 6-2. Straight Connection Pin Configuration

6.1.5 Setting the Computer's Network Communication

Note: *The instructions and screenshots below apply to computers running Microsoft Windows 98 as their operating system. Windows 2000 and Windows XP installation is similar although the options may not appear in precisely the same place. For help with Windows 2000 or Windows XP installations, see your Network Administrator or contact your DIGI dealer.*

1. Open the Windows control panel.
2. Open the network dialog box by double-clicking on the network icon in the control panel.

Figure 6-2. Network Selection in Control Panel

3. In the network dialog box, find the listing for your network interface card (NIC) in relation to the TCP/IP protocol. (You may have to scroll down to find it.)

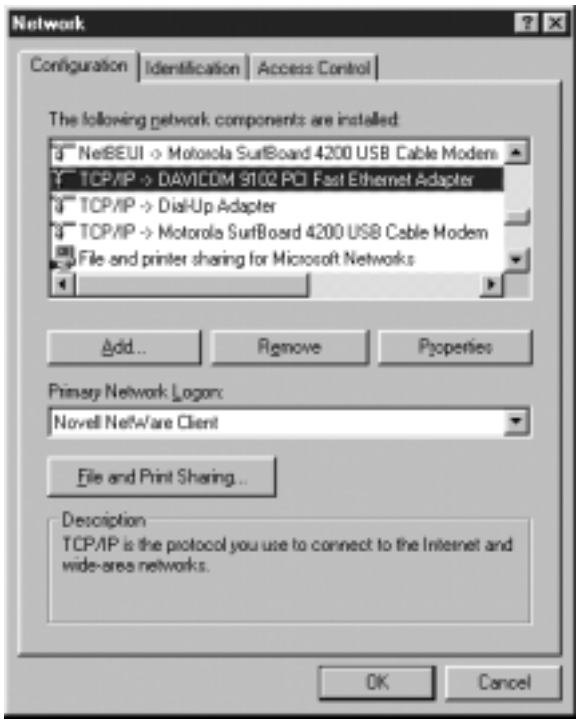


Figure 6-3. Select Network Interface Card

4. Once you have selected your NIC card for the TCP/IP protocol, click on the Properties button. This will open the Properties dialog box.

   At the IP Address tab, click the radio button for *Specify an IP address*. Then enter an IP address for your computer that is different than the scale's IP address. If it not already being used on your network you can use 192.168.0.2. Enter a Subnet mask of 255.255.255.0. Then click the OK button.

Figure 6-4. Assign IP Address to Computer

5. You may be prompted to insert your Windows operating disc by a dialog box like the one below. If so, put the disc in your CD drive and click the OK button.

Figure 6-5. Prompt for Windows Disc

6. After the necessary files have been updated on your computer, you will be asked to restart your computer so that the changes can be registered. Click the Yes button.

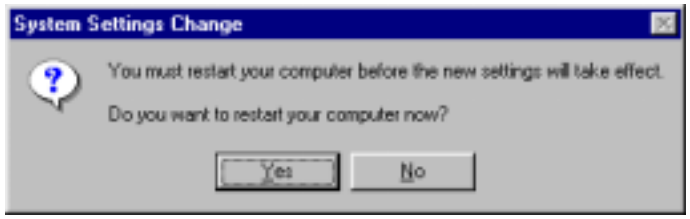


Figure 6-6. Restart Computer Dialog Box

7. Once your computer has restarted, it is ready to communicate to the scale. Go to Section 6.1.6.

6.1.6 Entering the Data Transfer Mode on the Scale

On the DC-200/300, press REZERO + SHIFT UP. The scale will briefly display a message saying that the Data Transfer Mode is initializing.

Figure 6-7. Data Transfer Mode Initializing

Next you will be prompted to restart the scale.

Figure 6-8. Restarting Scale Into Data Transfer Mode

8. Turn the scale off and on again. After the power-up sequence, the DC-200/300 will confirm that it is

ready for data transfer to and from the computer.

Figure 6-9. Data Transfer Ready Confirmation

9. You can now use the software tools you received on the disc that came with your DC-200/300 scale. For instructions on how to use the various programs, please see the following sections of this manual.

- to upload and download specification settings for scale, use the Spec Upload program (see Section 2.9.2)
- to upload and download inventory items as well as text, address, logo and job sequence data, use the DC-300 Utility program (see Section 8.2).
- to design and upload free label formats, use the DC-300 Label Editor program (see Section 5.2).

6.1.7 Exiting The Data Transfer Mode on the Scale

When you are done transferring data between the scale and a computer, use the following steps to return the scale to normal weighing operations.

Figure 6-10. Exiting Data Transfer Mode

1. Press REZERO + SHIFT DOWN. The scale will briefly display a message saying that the Data Transfer Mode is exiting.

   Next you will be prompted to restart the scale.

Figure 6-11. Restart Scale to Exit Data Transfer Mode

Once you have restarted the scale, you will be returned to normal weighing operations.

6.1.8 Pinging the Scale to Test the Ethernet Connection

If you are having trouble establishing an Ethernet connection between the DC-200/300 scale and your computer, you can test whether or not the connection is active by "pinging" the scale from the computer.

1. Make sure that SPEC 40 - Network Interface is set to 1: Twisted Cable (Eth). Set SPEC 61 - Ethernet Function to 2: Data Transfer Mode. For instructions on how to set the scale's customer specifications, please see Section 2.9. When you press the CODE key to store the SPEC changes, the scale will come up in the Data Transfer Mode.
2. On your computer, go to an MS DOS prompt or command prompt. A shortcut to an MS DOS or command prompt can usually be found in the "Accessories" folder under Programs. If you have trouble getting to an MS DOS or command prompt on your computer, talk to your IT or network administrator.
3. At the MS DOS or command prompt type "ping 192.168.0.1" and press the Enter key. If you have set your scale's IP address to something other than 192.168.0.1, put that IP address in place of that IP address after the ping command. For DC-200's the default IP address is 192.168.0.2.
4. If the Ethernet connection is working, the ping will get a response from the scale.

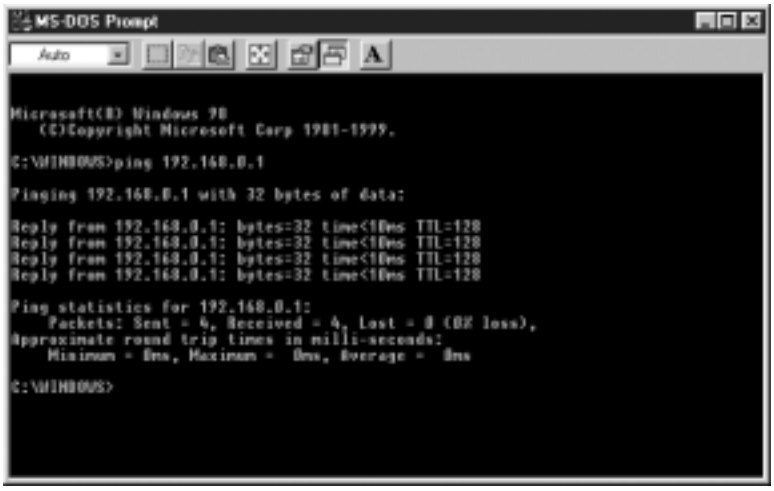


Figure 6-12. Active Reply from Pinging the Scale

If the Ethernet connection is not working properly, the ping command will attempt the communication four times and each time it will time out without a response.

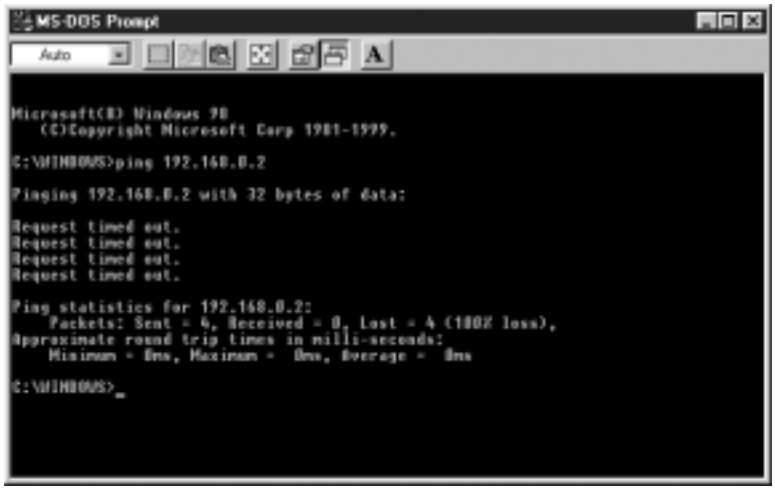


Figure 6-13. Inactive Reply from Pinging the Scale

If the connection is not working properly, recheck the scale specifications under Section 6.1.6 and make sure that you have set the computer's IP address to be something different than the scale's as described in Section 6.1.5. Then, try pinging the scale again.

6.2 RS-232 Connection

The DC-200/300 scale output can be sent to and captured by the HyperTerminal program in Microsoft Windows. This connection can also be used to test whether the scale is outputting correctly. To use the following procedure, you must connect one of the scale's RS-232C port and one of the computer's COM ports.

6.2.1 Spec Settings for RS-232C Connection to a PC

The customer specifications on the scale must be set to tell the DC-200/300 which of its three RS-232C ports (main, SIO1 or SIO2) you want the output to the PC to be sent through.

If the printer is connected to the main port (next to the keyboard port), the settings should be as follows:

- SPEC 15: SIO SELECT JOB to "2: PC"
- SPEC 16: BAUD RATES (SIO) to the proper baud rate for your application
- SPEC 17: DATA LENGTH (SIO) to the proper length for your application
- SPEC 18: PARITY BIT (SIO) to the proper setting for your application
- SPEC 19: STOP BIT (SIO) to the proper setting for your application

If the PC is connected to one of the option ports, the spec settings depend upon what else you have connected to the other port. These two RS-232C ports are set in tandem using SPEC 20: RS232 OPTION CARD. Possible combinations include the following:

If connecting to	Set specs as follows
a PC on SIO1 an external printer on SIO2	SPEC 20: RS232 OPTION CARD to "3: PRN (DIN2) - PC (DIN1) SPEC 21: BAUD RATE (DIN1) to the appropriate baud rate for the PC SPEC 22: DATA LENGTH (DIN1) to the appropriate number of bits for the PC SPEC 23: STOP BIT (DIN1) to the appropriate number of bits for the PC SPEC 24: PARITY BIT (DIN 1) to the appropriate odd or even for the PC SPEC 25: BAUD RATE (DIN2) to the appropriate baud rate for the printer SPEC 26: DATA LENGTH (DIN2) to the appropriate number of bits for the printer SPEC 27: STOP BIT (DIN2) to the appropriate number of bits for the printer SPEC 28: PARITY BIT (DIN 1) to the appropriate odd or even for the printer SPEC 32: TYPE OF PRINTER to the appropriate setting for the printer you are connecting
an external printer on SIO1 a PC on SIO2	SPEC 20: RS232 OPTION CARD to "4: PC (DIN2) - PRN (DIN1) SPEC 21: BAUD RATE (DIN1) to the appropriate baud rate for the printer SPEC 22: DATA LENGTH (DIN1) to the appropriate number of bits for the printer SPEC 23: STOP BIT (DIN1) to the appropriate number of bits for the printer SPEC 24: PARITY BIT (DIN 1) to the appropriate odd or even for the printer SPEC 25: BAUD RATE (DIN2) to the appropriate baud rate for the PC SPEC 26: DATA LENGTH (DIN2) to the appropriate number of bits for the PC SPEC 27: STOP BIT (DIN2) to the appropriate number of bits for the PC SPEC 28: PARITY BIT (DIN 1) to the appropriate odd or even for the PC SPEC 32: TYPE OF PRINTER to the appropriate setting for the printer you are connecting
a force balance on SIO1 a PC on SIO2	SPEC 20: RS232 OPTION CARD to "5: PC (DIN2) - FB (DIN1) SPEC 21: BAUD RATE (DIN1) to the appropriate baud rate for the force balance SPEC 22: DATA LENGTH (DIN1) to the appropriate number of bits for the force balance SPEC 23: STOP BIT (DIN1) to the appropriate number of bits for the force balance SPEC 24: PARITY BIT (DIN 1) to the appropriate odd or even for the force balance SPEC 25: BAUD RATE (DIN2) to the appropriate baud rate for the PC SPEC 26: DATA LENGTH (DIN2) to the appropriate number of bits for the PC SPEC 27: STOP BIT (DIN2) to the appropriate number of bits for the PC SPEC 28: PARITY BIT (DIN 1) to the appropriate odd or even for the PC SPEC 29: RS232C CONNECT FB to "1: ENABLE" SPEC 30: TYPE OF FORCE BAL to "0: EXPORT"

Table 6-3. Spec Settings for RS232C Ports SIO1 and SIO2

If connecting to	Set specs as follows
a PC on SIO1 a force balance on SIO2	SPEC 20: RS232 OPTION CARD to “6: FB (DIN2) - PC (DIN1) SPEC 21: BAUD RATE (DIN1) to the appropriate baud rate for the PC SPEC 22: DATA LENGTH (DIN1) to the appropriate number of bits for the PC SPEC 23: STOP BIT (DIN1) to the appropriate number of bits for the PC SPEC 24: PARITY BIT (DIN 1) to the appropriate odd or even for the PC SPEC 25: BAUD RATE (DIN2) to the appropriate baud rate for the force balance SPEC 26: DATA LENGTH (DIN2) to the appropriate number of bits for the force balance SPEC 27: STOP BIT (DIN2) to the appropriate number of bits for the force balance SPEC 28: PARITY BIT (DIN 1) to the appropriate odd or even for the force balance SPEC 29: RS232C CONNECT FB to “1: ENABLE” SPEC 30: TYPE OF FORCE BAL to “0: EXPORT”

Table 6-3. Spec Settings for RS232C Ports SIO1 and SIO2

6.2.2 Connecting the PC to the RS-232C Port

The DC-200/300 can be connected to an IBM compatible personal computer using one of the RS-232C ports on the scale, either the main port next to the keyboard port or one of the option ports next to the Ethernet port (SIO1 and SIO2).

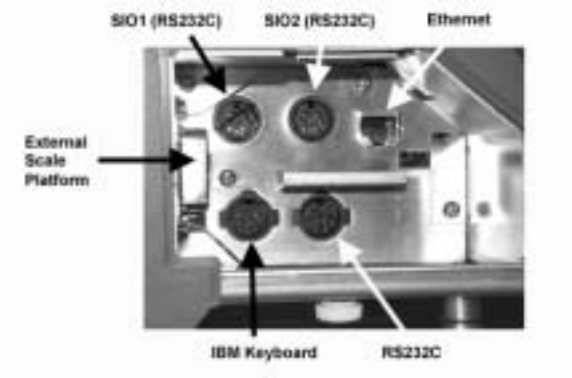


Figure 6-14. DC-200/300 Interface Ports

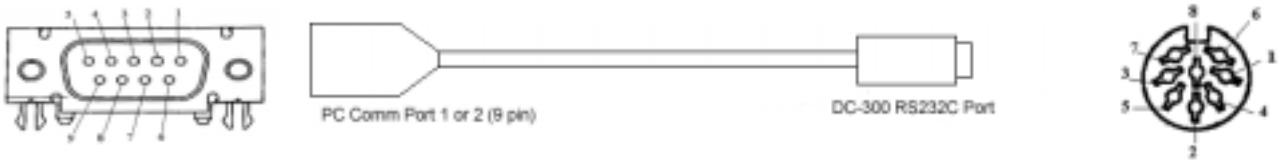


Figure 6-15. Connection from Scale to PC

Pin Number	Signal
1	CD
2	RXD
3	TXD
4	
5	GND
6	DSR
7	RTS
8	CTS
9	

Table 6-4. Nine-Pin Plug Pin Description

Pin Number	Signal
1	CTS
2	GND
3	DSR
4	RXD
5	TXD
6	DTR
7	RTS
8	Vcc

Table 6-5. Eight-Pin DIN Plug Pin Description

6.2.3 Configuring Communication Between the Scale and the Computer

1. On the Windows Taskbar, click on the Start Button.
2. From the Start menu select Programs and then, from the Programs menu select Accessories.
3. Within the Accessories menu select Communications and in the Communications menu choose HyperTerminal.
4. Once the HyperTerminal application is open, click on File in the Menu Bar to open the File Menu. From the File Menu, select Properties.
5. In the Properties dialog box, select the tab labeled “Connect To”. In the “Connect Using” list box select the computer’s com port you have connected the DC-200/300 scale to. Then click on the “Configure” button beneath the list box.
6. In the Port Settings dialog box, set the following:
   - set Bits per second: to 4800
   - set Data bits: to 7
   - set Parity: to Even
   - set Stop Bits to 1
   - set Flow Control: to Hardware

When you are done configuring the Port Settings, click on the OK button to exit the Port Settings dialog box.

7. In the Properties dialog box, select the tab labeled Settings.
8. In the Settings dialog box, click on the button labeled ASCII Setup. Then, in the ASCII Setup dialog box, click on the *Append line feeds to incoming line ends* check box to select it. Click on the OK button to close the ASCII Setup dialog box.
9. Click on the OK button to close the Properties dialog box.

6.2.4 Setting HyperTerminal to Capture Data Coming From the Scale

1. In the HyperTerminal window, select the Transfer menu from the menu bar.
2. From the Transfer menu, select Capture Text. When the Capture Text dialog box opens, type in the file name you want HyperTerminal to save the incoming data to. You can use the Browse button to change the location where the file will be saved from the default of C:\PROGRAM FILES\ACCESSORIES\HYPERTERMINAL.
3. Click on the Start button to begin capturing data.

6.2.5 Sending Data from the Scale to HyperTerminal

1. Establish a unit weight and a count on the DC-200/300.
2. Press the * Reprint key to send the data. The output from the scale will appear in the HyperTerminal window.
3. In the HyperTerminal window, select the Transfer menu from the menu bar. Then select Capture Text and click on Stop.

6.2.6 Scale Data Header Codes

The data sent from the DC-200/300 to a computer via the RS-232C port is in the following format:

HEADERDATA1CRHEADERDATA2CRLF

Each datum consists of a string: “HEADER” “DATA” and “CR”.

CR (carriage return) represents the ASCII data H’0D which must appear at the end of each data string.

LF (line feed) represents the ASCII data H’0A which must appear as a termination code at the end of a transmission.

SPEC 35 - PC DATA WITH HEADER controls whether headers are sent with the data or not. Set SPEC 35 to “0: YES” to send headers with the data, to “1: NO” to omit the headers. If the data is sent without headers, the data sent out is assumed to the item’s ID Code.

SPEC 36 - PC DATA HEADER TYPE controls whether the header is output as a code or as a title.

Header Title	Header Code	ASCII Code	Data
NET WEIGHT	0	30	Net Weight
UNIT WEIGHT	1	31	Unit Weight
QUANTITY	2	32	Quantity
ID CODE	3	33	ID Code
TARE	4	34	Tare Weight
GROSS WEIGHT	A	41	Gross Weight
STATUS	B	42	Status
DATE & TIME	C	43	Date & Time
SET P1(W)	F	46	Set Point 1 [W]
SET P1(Q)	G	47	Set Point 1 [Q]
SET P2	H	48	Set Point 2
TOTAL QUANTITY	I	49	Total Quantity
INVENTORY	K	4B	Inventory
PART NO	M	4D	Part Number
PART NAME	N	4E	Part Name
LOT NO	E	45	Lot Number
SCALE NO	V	56	Scale Platform Number

Table 6-6. Data Header Codes and Titles

6.2.7 Requesting Data From the Scale Using HyperTerminal

The Windows HyperTerminal application can also be used to send commands to the DC-200/300 scale to request data.

1. On the Windows Taskbar, click on the Start Button.
2. From the Start Menu select Programs and then, from the Programs Menu select Accessories.
3. Within the Accessories Menu select WordPad.
4. In WordPad enter a Z command in capital letters, followed by the Enter key. (Example: Z1) The following Z commands are available:

Z Command	Function
Z0	Rezero
Z1	Print
Z2	Unit Weight Clear
Z3	Plus
Z4	Minus
Z5	Tare
Z6	Clear
ZS1	Scale 1
ZS2	Scale 2
ZS3	Scale 3

Table 6-7. Z Commands Available

5. Name the file as a text file (Example: Z1.txt) and save it to the HyperTerminal folder in Windows (generally at C:\PROGRAM FILES\ACCESSORIES\HYPERTERMINAL).
6. On the Windows Taskbar, click on the Start Button.
7. From the Start Menu select Programs and then, from the Programs Menu select Accessories.
8. Within the Accessories Menu select Communications and in the Communications Menu choose HyperTerminal.
9. Once the HyperTerminal application is open, click on Transfer in the Menu Bar. From the Transfer Menu, select Send Text File.
10. In the Send Text File dialog box select the file you have just saved in WordPad (Example: Z1.txt) or a previously saved text file. Then click on the OK button.
11. The DC-200/300 scale will send the requested data back to HyperTerminal, where it will appear in the HyperTerminal window. If you want to capture and save the data, set HyperTerminal up to capture as discussed in.

7.0 Network and Interfaces: Scanners, Keyboards, Balances

7.1 Connecting an IBM Keyboard

The DC-200/300 can be connected to an IBM PC/AT keyboard to speed data entry in the Operation and Programming modes. The keyboard connects to the scale at the port labeled IBM KEYBD.

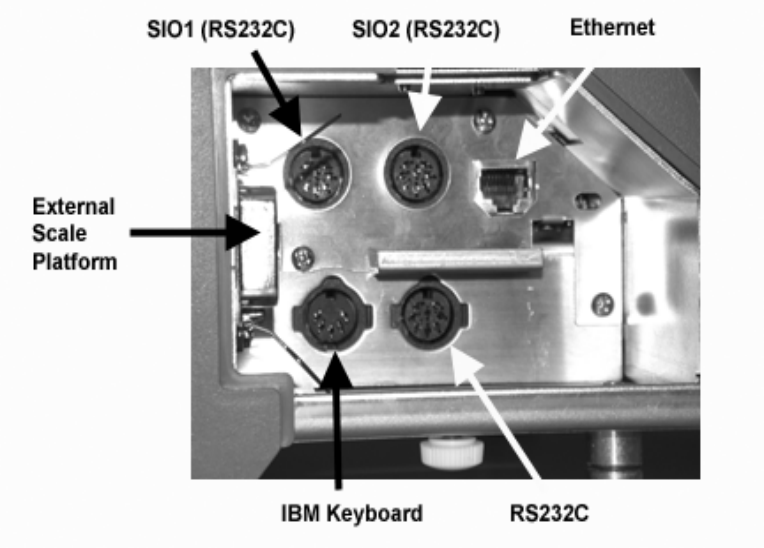


Figure 7-1. Keyboard Port Location

Set SPEC 37: IBM KEYBOARD PORT to “0: IBM KEYBOARD”.

Note: *For instructions on how to set the customer specifications, please see Section 2.9.*

The connector must be a 5-pin DIN (female) with the following pin configuration:

Pin No.	Signal
1	Clock
2	Data
3	-
4	Ground (SD)
5	5VDC
-	Ground (FG)

Table 7-1. Keyboard DIN Connector Pin Configuration

In addition to using the alphabetic and numeric keys on the IBM PC/AT keyboard to enter information such as Part Name, Part Number, Address, etc, the IBM PC/AT keyboard can also be used to control other scale functions. The IBM PC/AT keyboard is mapped to the scale functions as follows:

DC-200/300 Function	IBM PC/AT Keyboard
alphabetic key	alphabetic key
numeric key	numeric key
SPACE BAR	SPACE
CODE	F3
PRINT SCREEN	*
/	/ (10 KEY)
+	+ (10 KEY)
-	- (10 KEY)
ENTER	* ENTER/PRINT
CLEAR	BACKSPACE
<<	¨
>>	Æ
INSERT	INSERT
DELETE	DELETE

Table 7-2. IBM Keyboard Function Mapping

7.2 Connecting a Barcode Scanner

The DC-200/300 will accept a barcode scanner connected either to the main RS-232C port (RS-232 scanner) or to the IBM keyboard port (wedge scanner that emulates a keyboard). In order to use a scanner, you must set the Customer Specifications of the DC-200/300 scale to recognize the scanner, connect the scanner to the appropriate port and, in some cases, do the set-up on the scanner required by the scanner manufacturer.

7.2.1 Header Codes

Data can be input either with headers or without. The following header codes are the ones recognized by the DC-200/300:

Header Code	ASCII Code	Data
1	31	Unit Weight
2	32	Quantity
3	33	ID Code
4	34	Tare Weight
A	41	Gross Weight
E	45	Lot Number
F	46	Set Point 1 (Weight0
G	47	Set Point 1 (Quantity)
H	48	Set Point 2
I	49	Total Quantity
K	4B	Inventory
M	4D	Part Number
N	4E	Part Name

Table 7-3. Barcode Header Codes

With headers, the bar code data is received as follows:

HEADER DATA CR (carriage return)

Without headers, the bar code data is received as follows:

DATA CR (carriage return)

The DC-200/300 also supports the reading of three-line barcodes. The barcodes must have the headers shown in Table 7-3 and be in following format:

Line 1: Space HEADER DATA1 CR (carriage return)

Line 2: Space DATA2 CR (carriage return)

Line 3: Data3 CR (carriage return)

To configure the DC-200/300 to recognize barcodes with or without headers, set SPEC 37: BAR CODE SCANNER (BCS) WITH HEADER to either "0: Enable" or "1: Disable".

Note: *For instructions on how to set the customer specifications, please see Section 2.9.*

7.2.2 Z Commands via Barcodes

You can also scan barcode representations of the scale's Z commands. This allows the scale operator to use the scanner to initiate certain scanner functions:

Z Command	Function
Z0	Rezero
Z1	Print
Z2	Unit Weight Clear
Z3	Plus
Z4	Minus
Z5	Tare
Z6	Clear
ZS1	Scale 1
ZS2	Scale 2
ZS3	Scale 3
ZS4	Scale 4

Table 7-4. Z Command Functions

7.2.3 Configuring the RS-232C Port for a Scanner

An RS-232C scanner must be connected to the the main port (next to the keyboard port). The RS-232C ports on the scale's option card (next to the Ethernet port) are not configurable for a barcode scanner. The spec settings should be as follows:

Note: *For on how to set the customer specifications, please see Section 2.9.*

- SPEC 15: SIO SELECT JOB to "5: BARCODE SCANNER"
- SPEC 16: BAUD RATES (SIO) to the proper baud rate for your scanner
- SPEC 17: DATA LENGTH (SIO) to the proper length for your scanner
- SPEC 18: PARITY BIT (SIO) to the proper setting for your scanner
- SPEC 19: STOP BIT (SIO) to the proper setting for your scanner
- SPEC 38: BAR CODE SCANNER (BCS) WITH HEADER to "0: ENABLE" or "1: DISABLE" depending on whether the barcodes you are scanning have headers or not (see "Header Codes" above)

7.2.4 Connecting the Scanner to the RS-232C Port

Pin #	Signal
2	GND
4	RXD
5	TXD
7	RTS
1	CTS
8	VCC

Table 7-5. Pin Configuration for Barcode Scanner RS-232C Connection

7.2.5 Configuring the Keyboard Port for a Scanner

A wedge scanner (a type of scanner which emulates a keyboard) can be connected to the IBM KEYBRD port. If you choose this option, the spec settings should be as follows:

Note: *For instructions on how to set the customer specifications, please see Section 2.9.*

- SPEC 37: IBM KEYBOARD PORT to “0: BARCODE SCANNER”
- SPEC 38: BAR CODE SCANNER (BCS) WITH HEADER to “0: ENABLE” or “1: DISABLE” depending on whether the barcodes you are scanning have headers or not (see “Header Codes” above)

7.2.6 Programming the QSC-6000 Plus Quickscan RS-232C Scanner

If you are using the Quickscan RS-232C barcode scanner sold by Rice Lake Weighing Systems for DIGI scales, scan the following bar codes to set the scanner for proper communication with the DC-200/300.

1. Set to RS-232 Default Values and Enable RS-232 Interface

   Warning: use this barcode with caution because it will clear any features you may have programmed since the scanner's installation and reset them all to the defaults.

RETURN TO FACTORY

2. Program Communications Settings

   Parity = Even

   Stop Bit = 1

   Data Bits = 7

Set

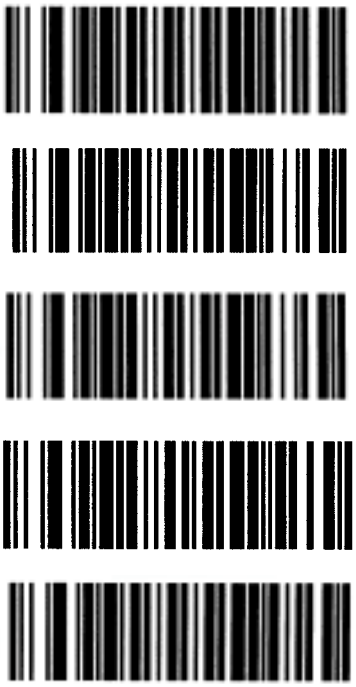
Even Parity

One Stop Bit

7 Data Bits

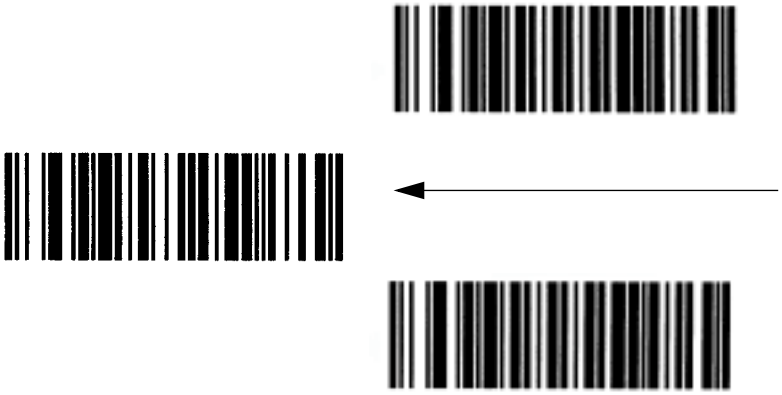
End

3. Set Handshaking Requirements
disable hardware handshaking
disable CTS/RTS flow control
disable XON/XOFF software handshaking



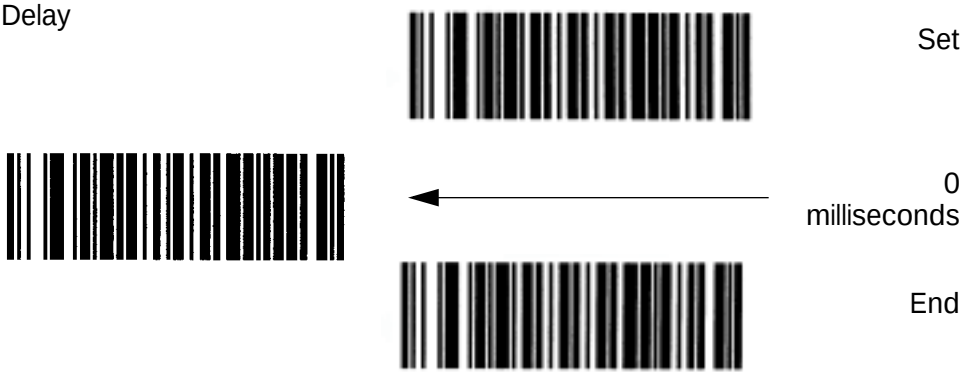
Set
Disable Hardware
Disable CTS/RTS
Disable Xon/Xoff
End

4. Set Baud Rate
4800 Baud

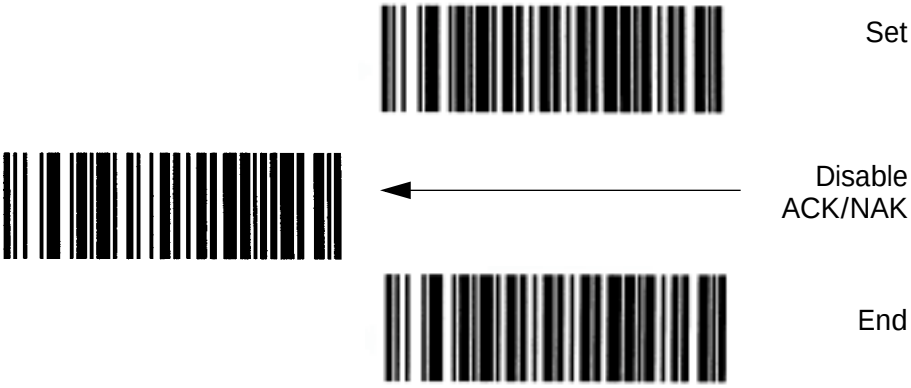


Set
4800 Baud
End

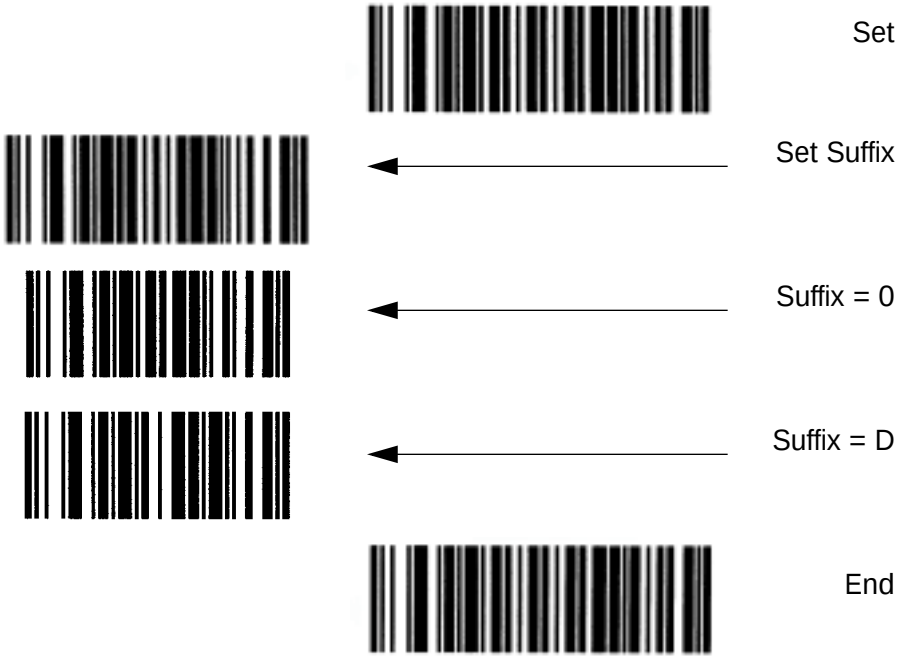
5. Set Intercharacter Delay
0 milliseconds



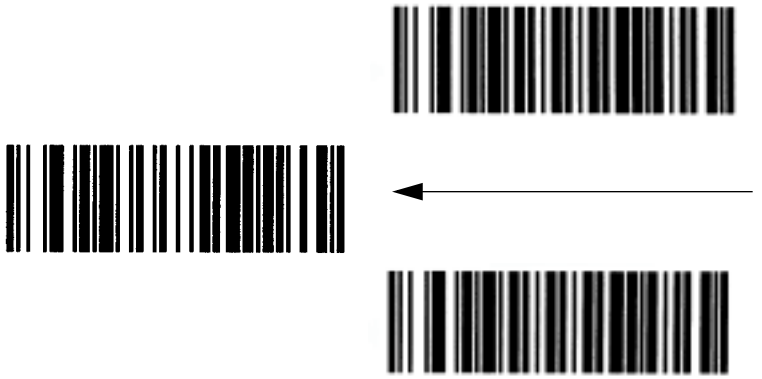
6. Disable ACK/NAK



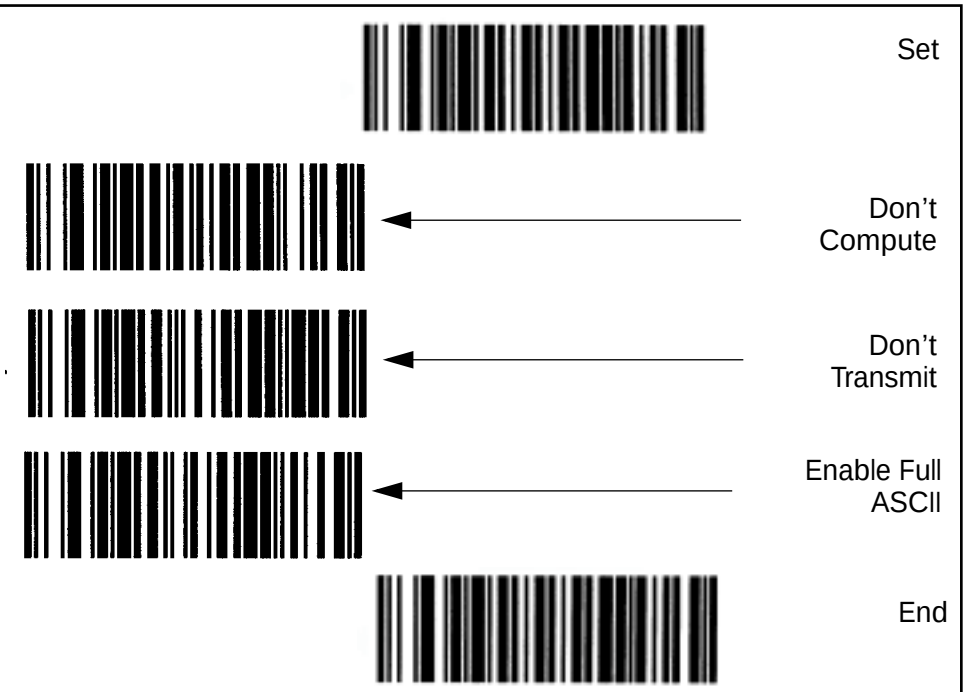
7. Set Suffix
Set Suffix
Suffix = 0
Suffix = D



8. Set Label ID
disable ID Control



9. Set Check Digit
don't compute check digit
don't transmit



10. Set Label Length
    set minimum length
    set length = 0

Set

Set Minimum Length

Set 0

Set 0

End

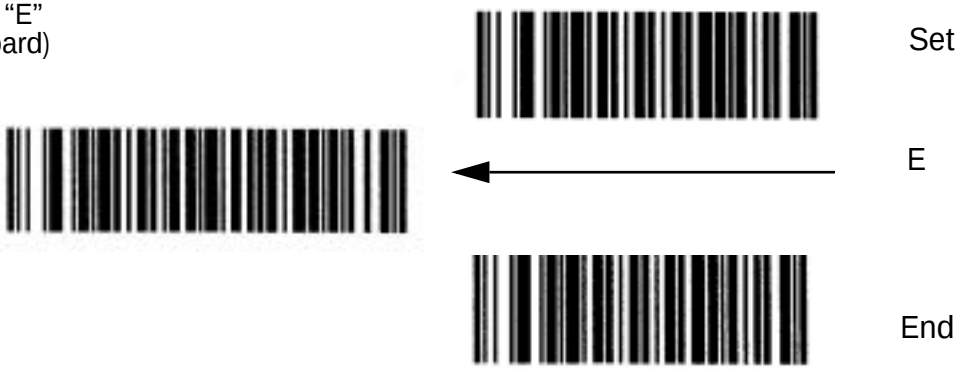
7.2.7 Programming the QuickScan Keyboard Wedge Scanner

If you are using the QuickScan keyboard wedge barcode scanner connected to the IBM keyboard port as described in Section 7.2.5 , scan the following barcodes to set up your scanner to communicate with the DC-200/ 300 scale.

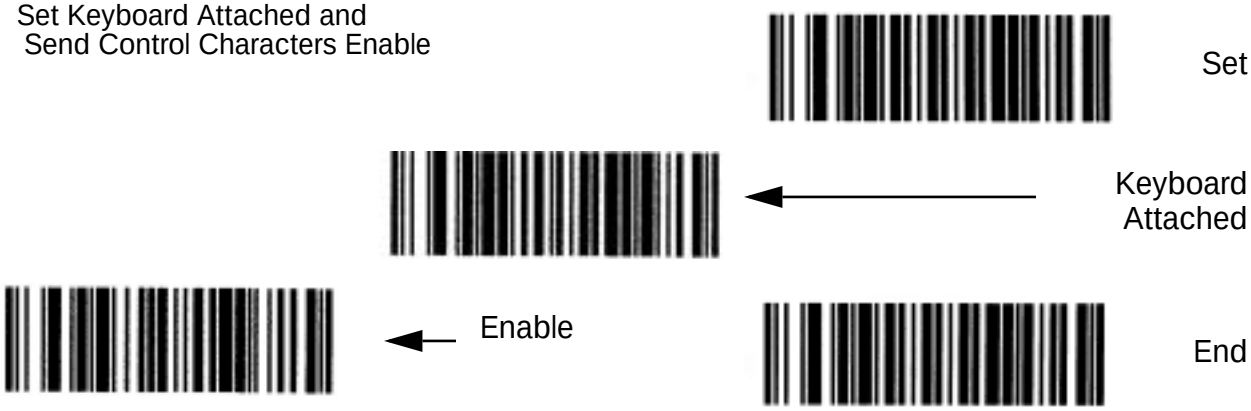
1. Set to RS-232 Default Values

   Warning: use this barcode with caution because it will clear any features you may have programmed

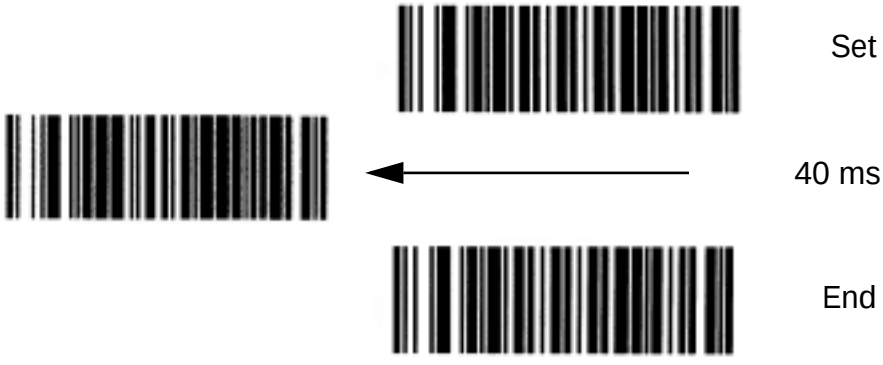
2. Set Keyboard Type to “E”
   (AT, PS2 W/US Keyboard)



3. Set Keyboard Attached and
   Send Control Characters Enable



4. Set Intercharacter Delay
   (40 milliseconds)



7.3 Connecting a Force Balance

A force balance can serve as an external scale when connected to one of the DC-200/300's RS-232C ports.

7.3.1 Spec Settings for Force Balance

In order for the DC-200/300 scale to recognize an force balance properly and receive data to it, there are customer specifications which must be set properly. The settings depend on which of the RS-232C ports you are connecting the balance to: the "main" RS-232C port or one of the "option ports" SIO1 or SIO2. (See Figure 7-1).

If the printer is connected to the main port (next to the keyboard port), the settings should be as follows:

Note: *For instructions on how to set the customer specifications, please see Section 2.9.*

- SPEC 15: SIO SELECT JOB to "1: FORCE BALANCE"
- SPEC 16: BAUD RATES (SIO) to the proper baud rate for your balance
- SPEC 17: DATA LENGTH (SIO) to the proper length for your balance
- SPEC 18: PARITY BIT (SIO) to the proper setting for your balance
- SPEC 19: STOP BIT (SIO) to the proper setting for your balance
- SPEC 29: RS232C CONNECT FB to "1: ENABLE"
- SPEC 30: TYPE OF FORCE BALANCE to "0: EXPORT"

If the printer is connected to one of the option ports, the spec settings depend upon what else you have connected to the other port. These two RS-232C ports are set in tandem using SPEC 20: RS232 OPTION CARD. Possible combinations include the following:RS232 Option Card (SIO1 and SIO2)

Note: *For instructions on how to set the customer specifications, please see Section 2.9.*

If connecting to...	Set specs as follows...
a force balance on SIO1 an external printer on SIO2	SPEC 20: RS232 OPTION CARD to "1: PRN (DIN2) - FB (DIN1) SPEC 21: BAUD RATE (DIN1) to the appropriate baud rate for the force balance SPEC 22: DATA LENGTH (DIN1) to the appropriate number of bits for the force balance SPEC 23: STOP BIT (DIN1) to the appropriate number of bits for the force balance SPEC 24: PARITY BIT (DIN 1) to the appropriate odd or even for the force balance SPEC 25: BAUD RATE (DIN2) to the appropriate baud rate for the printer SPEC 26: DATA LENGTH (DIN2) to the appropriate number of bits for the printer SPEC 27: STOP BIT (DIN2) to the appropriate number of bits for the printer SPEC 28: PARITY BIT (DIN 1) to the appropriate odd or even for the printer SPEC 29: RS232C CONNECT FB to "1: ENABLE" SPEC 30: TYPE OF FORCE BAL to "0: EXPORT" SPEC 32: TYPE OF PRINTER to the appropriate setting for the printer you are connecting
an external printer on SIO1 a force balance on SIO2	SPEC 20: RS232 OPTION CARD to "2: FB (DIN2) - PRN (DIN1) SPEC 21: BAUD RATE (DIN1) to the appropriate baud rate for the printer SPEC 22: DATA LENGTH (DIN1) to the appropriate number of bits for the printer SPEC 23: STOP BIT (DIN1) to the appropriate number of bits for the printer SPEC 24: PARITY BIT (DIN 1) to the appropriate odd or even for the printer SPEC 25: BAUD RATE (DIN2) to the appropriate baud rate for the force balance SPEC 26: DATA LENGTH (DIN2) to the appropriate number of bits for the force balance SPEC 27: STOP BIT (DIN2) to the appropriate number of bits for the force balance SPEC 28: PARITY BIT (DIN 1) to the appropriate odd or even for the force balance SPEC 29: RS232C CONNECT FB to "1: ENABLE" SPEC 30: TYPE OF FORCE BAL to "0: EXPORT" SPEC 32: TYPE OF PRINTER to the appropriate setting for the printer you are connecting

Table 7-6. Spec Settings for RS232C Ports SIO1 and SIO2

If connecting to...	Set specs as follows...
a force balance on SIO1 a PC on SIO2	SPEC 20: RS232 OPTION CARD to “5: PC (DIN2) - FB (DIN1) SPEC 21: BAUD RATE (DIN1) to the appropriate baud rate for the force balance SPEC 22: DATA LENGTH (DIN1) to the appropriate number of bits for the force balance SPEC 23: STOP BIT (DIN1) to the appropriate number of bits for the force balance SPEC 24: PARITY BIT (DIN 1) to the appropriate odd or even for the force balance SPEC 25: BAUD RATE (DIN2) to the appropriate baud rate for the PC SPEC 26: DATA LENGTH (DIN2) to the appropriate number of bits for the PC SPEC 27: STOP BIT (DIN2) to the appropriate number of bits for the PC SPEC 28: PARITY BIT (DIN 1) to the appropriate odd or even for the PC SPEC 29: RS232C CONNECT FB to “1: ENABLE” SPEC 30: TYPE OF FORCE BAL to “0: EXPORT”
a PC on SIO1 a force balance on SIO2	SPEC 20: RS232 OPTION CARD to “6: FB (DIN2) - PC (DIN1) SPEC 21: BAUD RATE (DIN1) to the appropriate baud rate for the PC SPEC 22: DATA LENGTH (DIN1) to the appropriate number of bits for the PC SPEC 23: STOP BIT (DIN1) to the appropriate number of bits for the PC SPEC 24: PARITY BIT (DIN 1) to the appropriate odd or even for the PC SPEC 25: BAUD RATE (DIN2) to the appropriate baud rate for the force balance SPEC 26: DATA LENGTH (DIN2) to the appropriate number of bits for the force balance SPEC 27: STOP BIT (DIN2) to the appropriate number of bits for the force balance SPEC 28: PARITY BIT (DIN 1) to the appropriate odd or even for the force balance SPEC 29: RS232C CONNECT FB to “1: ENABLE” SPEC 30: TYPE OF FORCE BAL to “0: EXPORT”

Table 7-6. Spec Settings for RS232C Ports SIO1 and SIO2

7.3.2 Connecting the Force Balance to the RS-232C Port

Figure 7-2. Connection from Scale to Force Balance

Pin Number	Description
1	
2	GND
3	
4	RXD
5	TXD
6	CTS
7	RTS
8	

Table 7-7. Eight-Pin DIN Connector - Force Balance

Pin Number	Description
1	
2	GND
3	
4	RXD
5	TXD
6	CTS
7	RTS
8	

Table 7-8. Eight-Pin DIN Connector - DC-300

8.0 Firmware Upgrade

The DC-200/300 uses a flash ROM rather than an EPROM to store its programming. This allows a dealer or authorized technician to upgrade the firmware on the scale without sending it in to Rice Lake Weighing Systems for service. On your DC-300 Set-Up Tools CD-ROM you will find the WinDload program that allows you to set up your PC to communicate with the scale and download updated firmware.

8.1 Determining Your Current Firmware Version Number

1. Turn the scale on. If the power switch on the back of the bottom of the scale is in the *OFF* position, turning it to the *ON* position will power up the scale. If the power switch is in the *ON* position but the display has been powered down by pressing the ON/OFF key on the front, the scale can be reactivated by pressing the ON/OFF key again.
2. The scale will beep once, then display the version of the DC-200/300 firmware it is operating on.

Figure 8-1. DC-200/300 Firmware Version Number Display

3. After a test of the elements of the display, the scale will next indicate that it is resetting the weight to zero as well as showing the firmware version number again.

Figure 8-2. DC-200/300 Weight Reset Screen

4. Finally, the scale will take you to the Stand-by Screen in the Operation Mode, ready for weighing and counting operations.

8.2 Installing the WinDload Software

1. Place the DC-300 Set Up Tools CD-ROM in your computer's CD-ROM drive. Go to the Windows Run menu, click on the Browse button and select your computer's CD-ROM drive.
2. Double-click on the folder labeled "WinDload", then on the folder labeled "WinDloadvX_X". Next, double-click on the folder named "disk1". Finally, double-click on the item labeled "Setup". Click on the OK button in the Run dialog box to launch the installation program.

3. The WinDload Setup screen will appear.

Figure 8-3. WinDload Installation Setup Screen

Please make sure that all other applications are closed, then click on the Next button.

4. The installation program will now ask you to confirm what directory you want to install the program to. Click the Next button to accept the default directory (C:\DIGISOFT\WINDLOAD_SE) or click on the Browse button to specify a different directory. Once you have chosen a directory in which to install the program, click on the Next button.

Figure 8-4. Choose Directory to Install WinDload

5. Next, the program will ask you to select what Windows Program Folder you want the program icon to appear in. The default is “winDload_SE”. You can choose from your existing folders in the bottom part

of the dialog box or type a new folder name under “Program Folders”.

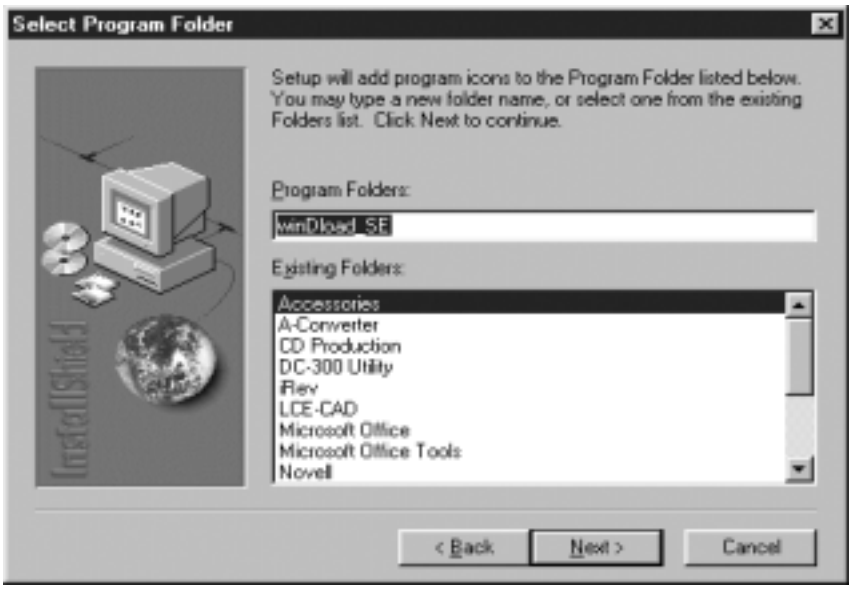


Figure 8-5. Select WinDload Program Folder

6. The installation program will now check the settings you have chosen and offer you a chance to change them before proceeding. Once you are satisfied with the installation settings, click the Next button to continue. The installation program will now copy the necessary programs to your PC’s hard drive. While the copying is going on, the program will show you its progress.

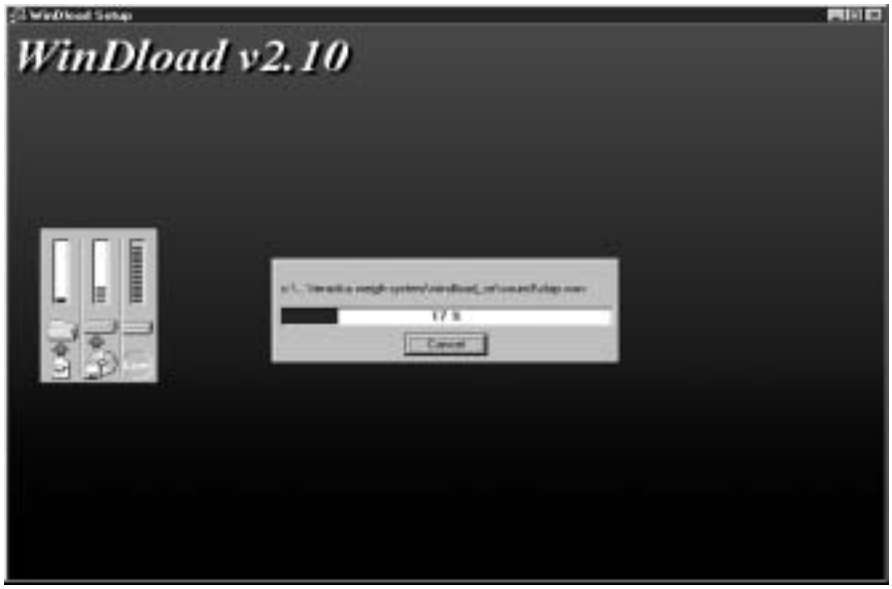


Figure 8-6. WinDload File Copying Progress

7. When the installation is complete, you will see the dialog box shown below. Click on the Finish button to

close the installation program and complete the process.

Figure 8-7. WinDload Installation Complete

8.3 Setting Up the WinDload Software

1. Start the WinDload software by double-clicking on the program icon, either on your Windows desktop or in the Program Folder you selected to install it in. The WinDload main screen will come up.

Figure 8-8. WinDload Main Screen

The following options will be available from the toolbar:

Button	Select for:
	Shortcut icon
	Update bin file from zip file
	Comm port setting
	File (data) locations
	Production setting with password lock
	Reset the software
	Help

Table 8-1. WinDload Toolbar

2. From the “Options” menu, click on “Software Settings”.

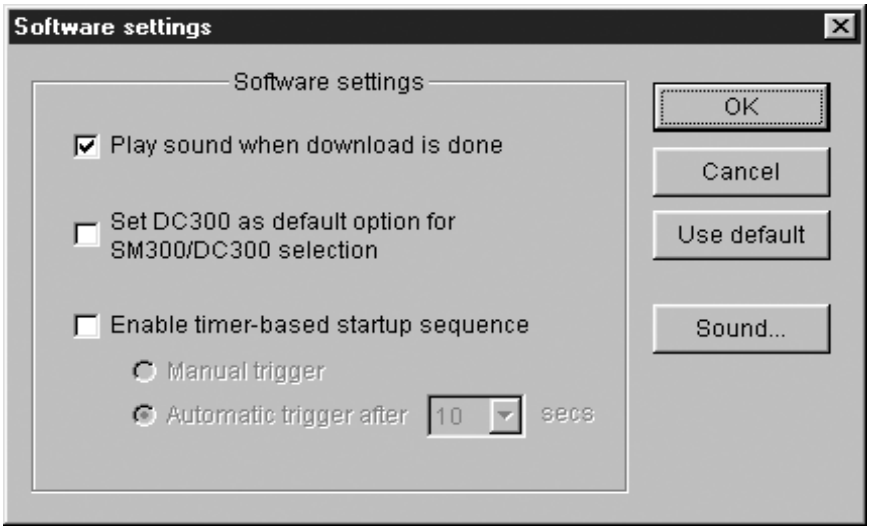


Figure 8-9. WinDload Software Settings

Make sure that the checkbox for “Set DC300 as default option for SM300/DC300 selection” is selected. If not, check this checkbox by clicking on it. Then click the OK button to save and exit “Software Settings”.

3. Enter “File Locations” by either clicking on the file cabinet icon on the toolbar or by selecting the “Options” menu and then “File

Locations”.

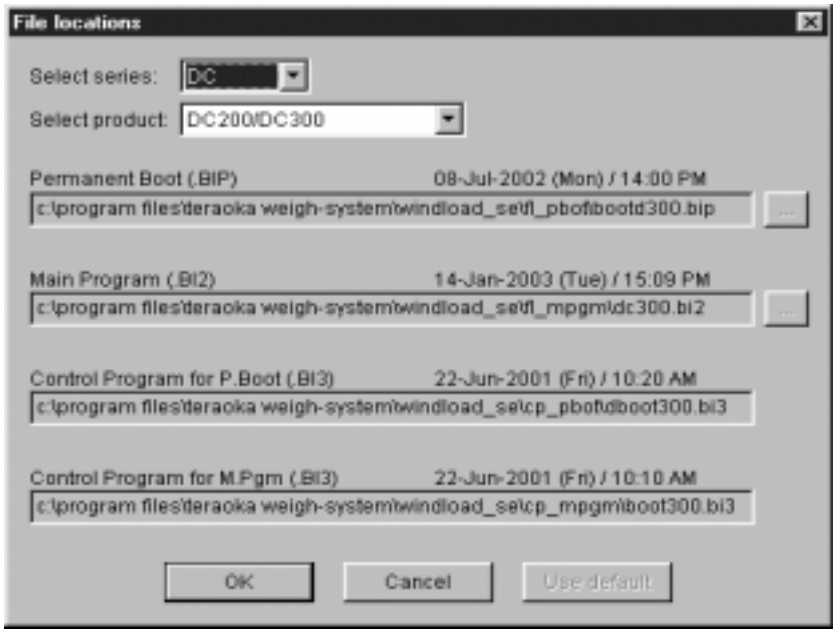


Figure 8-10. WinDload File Locations Selection

Use the drop-down “Select Series” list box to select “DC”. Then choose “DC200/DC300” from the “Select Product” list box. The program will then assign and show the file locations for the files needed for downloading the new firmware upgrade. Click on the OK button to close the “File Locations” dialog box.

4. Select “Update BIN files from ZIP files”, either by clicking on the file folder icon on the tolbar or by selecting the “Actions” menu and then “Update BIN files from ZIP files”.
5. In the “Update BIN files from ZIP files” dialog box, click on the “DC200/DC300” line under “Scale/ Printer”. The line will be highlighted.

Figure 8-11. WinDload Update BIN files from ZIP file

Click on the button labeled Update BIN files from ZIP files to initiate the update process.

6. The program will now allow you to browse your computer for the latest DC-200/300 BIN ZIP files. Once you have located and selected the file, click the Open button. You will be prompted to verify the details of the file before proceeding. Click on the OK button if the file is correct or click to go back to the file selection screen.
7. A message will appear saying, *this might take a moment....*

Figure 8-12. WinDload Updating Message

Click on the OK button to continue.

8. When the update is complete, you will see a message confirming *update successful.*

Figure 8-13. WinDload Update Successful Message

Click on the OK button to close the BIN file updating window and return to the program. At the "Update BIN files from ZIP files" dialog box, click on the Close button to rturn to the Main Menu.

8.4 Connecting the DC-200/300 Scale to the Computer

In order to download the firmware to the scale, you will need to connect the RS-232C port on the DC-200/300 to the COM1 or COM2 port on the computer. The maximum cable length is 15 meters, with an 8 pin male DIN plug at the scale end and a 9 pin female D-Sub plug at the computer end. The pin configurations are shown below

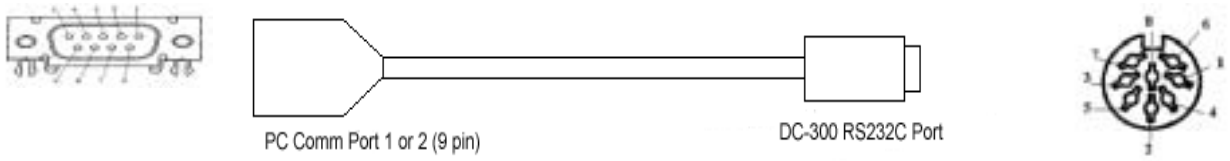


Figure 8-14. Connection from Scale to PC

Pin Number	Signal
1	CD
2	RXD
3	TXD
4	
5	GND
6	DSR
7	RTS
8	CTS
9	

Table 8-2. Nine-Pin Female D-Plug Pins

Pin Number	Signal
1	
2	GND
3	DSR
4	RXD
5	TXD
6	CTS
7	RTS
8	

Table 8-3. Eight-Pin Male DIN Plug Pins

8.5 Downloading Firmware to the Scale

1. In the WinDload program's main screen, click on the Start Monitoring button. The program will show that it is "ready to receive".

Figure 8-15. WinDload Ready to Receive

2. Power off the scale, using the power switch on the lower rear of the case of the scale, not the On/Off key on the keyboard. Power the scale back on while holding down the REZERO and D keys simultaneously. The scale display will show *PRG LOAD*.

Figure 8-16. DC200/300 Scale Ready for Program Load

3. On the computer a dialog box will appear asking you to "Select Device Type".

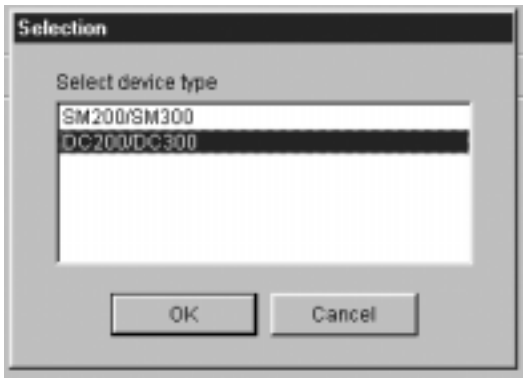


Figure 8-17. WinDload Select Device Type

DC-200/300 should be highlighted. If not, click on DC300 to select it and then click the OK button.

4. Next, the program will ask you to confirm that you really want to erase the scale's flash memory. The current DC-200/300 software version will be displayed along with the software update version you selected during BIN file updating (See Section 8.1).

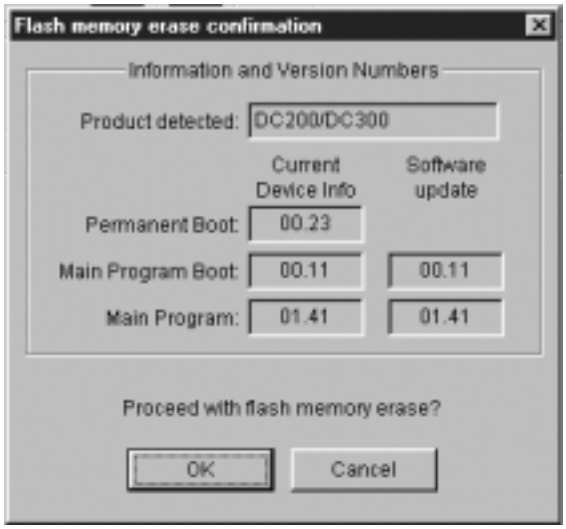


Figure 8-18. WinDload Erase Confirmation

To proceed with the flash memory erase, click on the OK button.

5. The program will show the status message "Flash memory erase", indicating that the procedure is in progress. After the erasure of the flash memory, a status bar will be displayed showing the progress of the downloading of the new firmware.

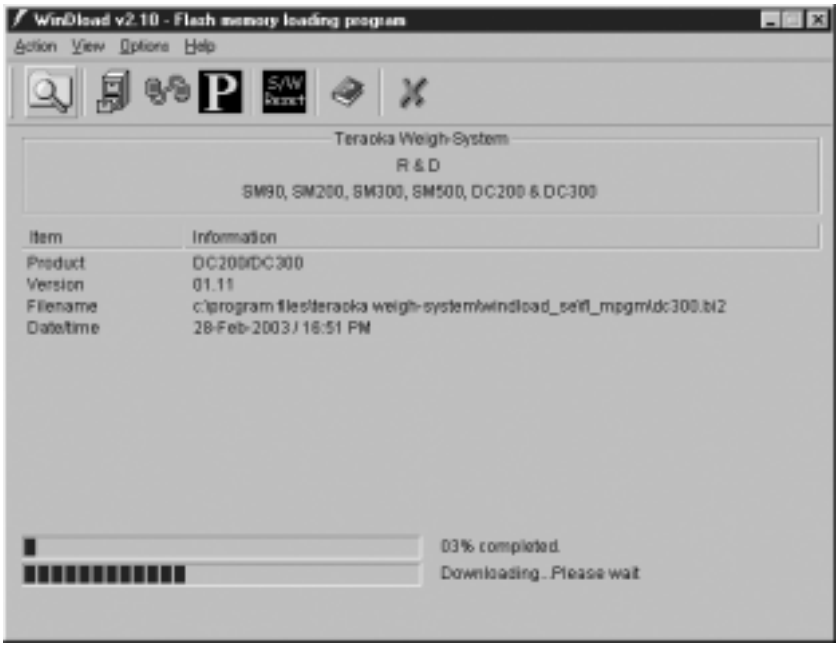


Figure 8-19. WinDload Downloading Progress

The scale continues to display *PRG LOAD*.

6. When the downloading of the new firmware to the scale is completed, the program will flash a message saying *Download Complete*.

Figure 8-20. WinDload Download Complete

Click anywhere on the "Download Complete" window to close it. The scale display will change stop displaying *PRG LOAD* to displaying the new firmware version number and then going to the stand-by screen.

7. To close the program, select the "Action" menu and then "Exit".

9.0 Appendix

9.1 DC-200/300 Error Message List

The DC-200/300's two-line alphanumeric display allows for detailed error messages. Use Table 9-1 to find the error message, possible causes for the error and ways to correct the problem. If these suggestions fail to correct the situation, please contact your DIGI dealer for assistance.

Error Message	Causes	Corrective Action
Paper End (DC-300 only)	The label sensor does not sense a label or there may be no more labels	Replace the label roll (see *DC-200/300 Operation Manual* - label and paper roll setup)
Please press Feed key (DC-300 only)	A label misfeed	Press the Feed key to re-align the labels
Please peel label (DC-300 only)	The peel sensor has been activated	Peel off the current label to clear the sensor
Non print (DC-300 only)	No manual printing available	
Non label (DC-300 only)	No free format has been programmed	Set a free format or choose one of the pre-programmed standard label formats (see Section 7.1.1, Available Label Types and Section 7.5.5, Programming a Free Format Label in the DC-200/300 Operation Manual).
Insufficient space (DC-300 only)	The print area is not large enough to fit data.	Change the size of the print area (see Section 7.5.5, Programming a Free Format Label) or change the label size (see Section 7.1.1, Available Label Types in the DC-200/300 Operation Manual)
Job sequence not exist	No job sequence has been programmed	Program the scale with a job sequence (see Section 8.0, Job Sequence Programming in the DC-200/300 Operation Manual)
Read file	Errors reading the file, memory errors	Clear the memory (contact your DIGI dealer)
Non factory name	No factory name has been programmed	Program a factory name (see Section 7.2.1, How to Program a Factory Name in the DC-200/300 Operation Manual)
Printer head no close	The thermal print head on the built-in printer has not been locked in place	Close the paper clamp on the print head (see Section 7.1.4, Label and Paper Roll Setup in the DC-200/300 Operation Manual)
Write file	Errors writing files, memory problems	Clear the memory (contact your DIGI dealer)
No memory	Not enough memory to carry out the requested action	Add memory to the scale or delete unnecessary data items.
Fle delete error	Error deleting files, memory problem	Clear the memory (contact your DIGI dealer)
Item code not exist	The requested item code does not exist in the item database	Program an item code into the scale (see Section 6.1.2, Programming Item Code in the DC-200/300 Operation Manual)
Total quantity = 0	Cannot print when the total quantity is zero	Enter a quantity value
Weight overflow	The weight is over the maximum capacity of the scale	Put a smaller number of pieces on the scale or switch te weight to a higher-capacity platform.
Illegal operation	The operation that you are trying to perform is incorrect	Check instructions for this operation and try again.
Quantity = 0	Cannot print when quantity is zero	Enter a quantity value

Table 9-1. DC-200/300 Error Message List

Error Message	Causes	Corrective Action
Key invalid	The key you have pressed is not valid during this operation	Recheck the instructions for this operation to see what the valid key functions are (see Section 1.2.2 Key Functions)
Number invalid	You have exceeded the maximum number of characters allowed for this field	Abbreviate the text you are entering so that it fits. See Section 7.1.3, in the DC-200/300 Operation Manual for character lengths allowed for different fields .
Exceed max limit	You have exceeded the maximum number of characters allowed for this fields	Abbreviate the text you are entering so that it fits. See Section 7.1.3, in the DC-200/300 Operation Manual for character lengths allowed for different fields .
Please press code key	Save the data and exit programming by pressing the Code key	
Date invalid	The date you have entered is not in the necessary format	Enter date in correct format Note: SPEC 05 sets date format. Default is MM: DD: YY. See Section 2.9, Configuration Settings.
Time invalid	The time you entered is not in the necessary format	Enter time in correct format Note: SPEC 06 sets time format. Default is HH: MM in 12-hour format. See Section 2.9, Configuration Settings.
Logo not exist (DC-300 only)	The requested logo is not programmed into the scale	Program a logo into the scale (see Section 7.2.4, Logo Files in the DC-200/300 Operation Manual)
Label invalid	The data requested to print on the label does not exist	Check the item to see if this data has been entered (see Section 6.3.7, View Item Information in the DC-200/300 Operation Manual)
Data invalid	The data keyed in is not in a valid format	Recheck the acceptable format for the data item (see Sectin 6.1.2, Programing Item Code in the DC-200/300 Operation Manual)
Quantity overflow	The quantity data is over the limit for the number of places that can be displayed	Work with a smaller quantity. The maximum number of digits for the quantity display is 6.
Record chosen in use	The record you want to delete is in use by another data file	Close the operation that is using the record and restart the delete procedure.
Address not exist (DC-300 only)	The address does not exist in the scale's database	Program an address into the scale (see Section 7.2.2, How to Program an Address File in the DC-200/300 Operation Manual)
Text not exist (DC-300 only)	The text field does not exist in the scale's database	Program a text field into the scale (see Section 7.2.3, How to Program a Text File in the DC-200/300 Operation Manual)
No print area (DC-300 only)	This label format does not include a print area for this field	Change to a different pre-programmed label format (see Section 7.1.2, Label Format Samples), or program a free format label that includes the item (see Section 7.5, Free Format Label Programming in the DC-200/300 Operation Manual)
Print inhibited	A weigh item cannot be printed during a counting operation	Exit the operation you are in, then re-try printing the label.
Force balance error	There is no force balance connected to the scale	Connect a force balance to the scale (see Section 7.3, Connection From Scale to Force Balance)
Scale A start up err press clr key to exit	Unable to detect scale A because it is not stable or the weight on the platform is out of the scale start-up range. Press Clear key to exit.	Bring the weight on the platform down to within the start-up range.

Table 9-1. DC-200/300 Error Message List

Error Message	Causes	Corrective Action
Scale B start up err press clr key to exit	Unable to detect scale B because it is not stable or the weight on the platform is out of the scale start-up range. Press Clear key to exit.	Bring the weight on the platform down to within the start-up range
Scale C start up err press clr key to exit	Unable to detect scale C because it is not stable or the weight on the platform is out of the scale start-up range. Press Clear key to exit.	Bring the weight on the platform down to within the start-up range
Force balance error press clr key to exit	Unable to detect a force balance during start-up. Press the Clear key to exit	Check the connection between the scale and the balance.

Table 9-1. DC-200/300 Error Message List

9.2 Appendix - Rezero Functions

The DC-200/300 uses the REZERO key in combination with other keys to provide shortcuts to certain functions or to allow entry to certain service functions. Table 9-2 summarizes the Rezero Functions and shows where a more detailed explanation of the function can be found in either the DC-200/300 Service Manual or the DC-200/300 Operation Manual.

REZERO Combination	Function	Description
REZERO + L	Change Default Label Format	Overrides all other label format programming during the current weighing operation until the scale is turned off. (See Section 7.6 of the DC-200/300 Operation Manual)
REZERO + * Reprint	Turn On/Off Internal Printer	Enables/disables the DC-300's internal printer. (See Section 7.1.8 of the DC-200/300 Operation Manual)
REZERO + Shift Down	Go Into Data Transfer Mode	Enables the scale's Ethernet port in the receive mode in order to be able to transfer item files, specifications and labels to and from a computer and the scale using the DC-300 service tools programs. (See Sections 3.2, 6.2, 7.3 and 11.6 of the DC-200/300 Operation Manual)
REZERO + Shift Up	Exit Data Transfer Mode	Takes the scale out of the data transfer mode in which you are able to transfer item files, specifications and labels to and from a computer and the scale using the DC-300 service tools programs. (See Sections 3.2, 6.2, 7.3 and 11.6 of the DC-200/300 Operation Manual)
REZERO + 001	Hardware Diagnostic Checks	Puts the scale through a series of hardware diagnostics to test internal functions and external ports. (See DC-200/300 Service Manual Section 3.1)
REZERO + 009	Internal Count Check	
REZERO + 124	Initialize Specifications	Enables you to restore the scale's specifications to the default values. (See DC-200/300 Operation Manual)
REZERO + 141	Customer Specifications	Allows you to view and change Specifications 00 to 62, designed to permit the customer to tailor the scale to his specific application. (See Section 3.1 of the DC-200/300 Operation Manual)
REZERO + 142	Weight and Measurement Specifications	Allows you to view and change Specifications 600 to 646, designed to permit the dealer or service technician to set the weighing parameters for the scale. (See Section 3.2 of the DC-200/300 Operation Manual)
REZERO + 284	Span Switch Status	Shows whether the span switch is on or off . (See Section 4.0 of the DC-200/300 Operation Manual)
REZERO + 514	Gap Adjust	If the thermal print head gets misaligned vertically, the vertical position can be adjusted. (See DC-200/300 Service Manual Section 3.2)

Table 9-2. Rezero Functions

REZERO Combination	Function	Description
REZERO + 515	Peel Sensor Adjustment	When the printer is set to partially peel the backing off the label stock, the Peel Sensor determines where the end of the label is so that the backing is peeled off just to the right point. (See DC-200/300 Service Manual Section 3.2)
REZERO + 516	Gap Sensor Adjustment	The label gap sensor is designed to detect the gap between labels on a label roll so that the printer can identify the starting position of each label and only one label is issued at a time during a print operation. (See DC-200/300 Service Manual Section 3.2.2)
REZERO + 0717	IP Address Check	Allows you to verify the IP Address the scale is programmed for in order to connect the scale to a network. (See Section 11.0 of the DC-200/300 Operation Manual)
REZERO + 0823	Thermal Head Adjustment	Displays the usage counter for the printer thermal head and allows you to rezero the counter if you are replacing the thermal head. (See DC-200/300 Service Manual Section 3.2.1
REZERO + 8715	Enter Calibration Mode	Puts the scale in calibration mode. (See Section 4.0 of the DC-200/300 Operation Manual Section)

Table 9-2. Rezero Functions

9.3 Character Code Tables

These tables can be used together with the SHIFT UP + V (CHAR TYPE) keys to enter characters not available directly from the DC-200/300's alphanumeric keyboard and numeric keypad.

9.3.1 ASCII Code

The DC-200/300 can send or receive any ASCII character value but due to limitations of the scale display, some characters cannot be shown on the screen. To enter an ASCII character in a text field that will support it (ex. Part Name) enter the Hex code corresponding to the ASCII character you want. Use the decimal values for ASCII characters listed in Table below when specifying print format strings under the DC-200/300 blank menu. The actual character printed depends on the character mapping used by the output device.

Control	ASCII	Dec	Hex	ASCII	Dec	Hex	ASCII	Dec	Hex	ASCII	Dec	Hex
Ctrl-@	NUL	00	00	space	32	20	@	64	40	`	96	60
Ctrl-A	SOH	01	01	!	33	21	A	65	41	a	97	61
Ctrl-B	STX	02	02	"	34	22	B	66	42	b	98	62
Ctrl-C	ETX	03	03	#	35	23	C	67	43	c	99	63
Ctrl-D	EOT	04	04	$	36	24	D	68	44	d	100	64
Ctrl-E	ENQ	05	05	%	37	25	E	69	45	e	101	65
Ctrl-F	ACK	06	06	&	38	26	F	70	46	f	102	66
Ctrl-G	BEL	07	07	'	39	27	G	71	47	g	103	67
Ctrl-H	BS	08	08	(	40	28	H	72	48	h	104	68
Ctrl-I	HT	09	09	)	41	29	I	73	49	i	105	69
Ctrl-J	LF	10	0A	*	42	2A	J	74	4A	j	106	6A
Ctrl-K	VT	11	0B	+	43	2B	K	75	4B	k	107	6B
Ctrl-L	FF	12	0C	,	44	2C	L	76	4C	l	108	6C
Ctrl-M	CR	13	0D	-	45	2D	M	77	4D	m	109	6D
Ctrl-N	SO	14	0E	.	46	2E	N	78	4E	n	110	6E
Ctrl-O	SI	15	0F	/	47	2F	O	79	4F	o	111	6F
Ctrl-P	DLE	16	10	0	48	30	P	80	50	p	112	70
Ctrl-Q	DC1	17	11	1	49	31	Q	81	51	q	113	71
Ctrl-R	DC2	18	12	2	50	32	R	82	52	r	114	72
Ctrl-S	DC3	19	13	3	51	33	S	83	53	s	115	73
Ctrl-T	DC4	20	14	4	52	34	T	84	54	t	116	74
Ctrl-U	NAK	21	15	5	53	35	U	85	55	u	117	75
Ctrl-V	SYN	22	16	6	54	36	V	86	56	v	118	76
Ctrl-W	ETB	23	17	7	55	37	W	87	57	w	119	77
Ctrl-X	CAN	24	18	8	56	38	X	88	58	x	120	78
Ctrl-Y	EM	25	19	9	57	39	Y	89	59	y	121	79
Ctrl-Z	SUB	26	1A	:	58	3A	Z	90	5A	z	122	7A
Ctrl-[	ESC	27	1B	;	59	3B	[	91	5B	{	123	7B
Ctrl-\	FS	28	1C	<	60	3C	\	92	5C	|	124	7C
Ctrl-]	GS	29	1D	=	61	3D	]	93	5D	}	125	7D
Ctrl-^	RS	30	1E	>	62	3E	^	94	5E	~	126	
Ctrl-_	US	31	1F	?	63	3F	_	95	5F	DEL	127	

Table 9-3. ASCII Character Chart (Part 1)

ASCII	Dec	Hex	ASCII	Dec	Hex	ASCII	Dec	Hex	ASCII	Dec	Hex
Ctrl-^	RS	30	1E	>	62	3E	^	94	5E	~	126
Ctrl-_	US	31	1F	?	63	3F	_	95	5F	DEL	127
Ç	128	80	á	160	A0		192	C0	α	224	E0
ü	129	81	í	161	A1		193	C1	β	225	E1
é	130	82	ó	162	A2		194	C2	Γ	226	E2
â	131	83	ú	163	A3		195	C3	π	227	E3
ä	132	84	ñ	164	A4		196	C4	Σ	228	E4
à	133	85	Ñ	165	A5		197	C5	σ	229	E5
å	134	86	ª	166	A6		198	C6	µ	230	E6
ç	135	87	º	167	A7		199	C7	τ	231	E7
ê	136	88	¿	168	A8		200	C8	Φ	232	E8
ë	137	89		169	A9		201	C9	Θ	233	E9
è	138	8A	¬	170	AA		202	CA	Ω	234	EA
ï	139	8B	1/2	171	AB		203	CB	δ	235	EB
î	140	8C	1/4	172	AC		204	CC	∞	236	EC
ì	141	8D	¡	173	AD		205	CD	ϕ	237	ED
Ä	142	8E	«	174	AE		206	CE	∈	238	EE
Å	143	8F	»	175	AF		207	CF	∩	239	EF
É	144	90		176	B0		208	D0	≡	240	F0
æ	145	91		177	B1		209	D1	±	241	F1
Æ	146	92		178	B2		210	D2	≥	242	F2
ô	147	93		179	B3		211	D3	≤	243	F3
ö	148	94		180	B4		212	D4	⌠	244	F4
ò	149	95		181	B5		213	D5	⌡	245	F5
û	150	96		182	B6		214	D6	÷	246	F6
ù	151	97		183	B7		215	D7	≈	247	F7
ÿ	152	98		184	B8		216	D8	°	248	F8
Ö	153	99		185	B9		217	D9	•	249	F9
Ü	154	9A		186	BA		218	DA		250	FA
¢	155	9B		187	BB		219	DB		251	FB
£	156	9C		188	BC		220	DC		252	FC
¥	157	9D		189	BD		221	DD	2	253	FD
Pts	158	9E		190	BE		222	DE		254	FE
f	159	9F		191	BF		223	DF		255	FF

Table 9-4. ASCII Character Chart (Part 2)

9.3.2 Teraoka Codes

To enter an character from the Teraoka Code Table in a text field that will support it (ex. Part Name, Part Number, Factory Name, Address, Text Field) enter the numeric value corresponding to the character you want.

SPACE	A	B	C	D	E	F	G	H	I
00	01	02	03	04	05	06	07	08	09
J	K	L	M	N	O	P	Q	R	S
10	11	12	13	14	15	16	17	18	19
T	U	V	W	X	Y	Z	,	.	-
20	21	22	23	24	25	26	27	28	29
0	1	2	3	4	5	6	7	8	9
30	31	32	33	34	35	36	37	38	39
@	!	“	#	$	%	&	/	(	)
40	41	42	42	44	45	46	47	48	49
‘	<	>	+	:	*	À	Â	È	Ê
50	58	59	69	72	73	77	78	79	80
É	Ô	Ç	?	→	←				
81	82	83	96	97	98				

Table 9-5. Teraoka Codes